nology and engineering opens to the Gaordie public this week to celebrate the 900th birthdey of Newcastle-upon-Tyne.
It tekes place at the University

impressive range of products which draw on traditional and new sepects of industry in the North East.
Despite losing the battle for the inmos site, Newcastle shows

power of the microprocessor.

For thet reeson the City's

Polytechnic is linked with the

University and the softwere

house CAP-CPP in the Microelectronics Applications Research Institute, MARI, based in New-

in MARi's wake a number of specialized and another houses ere ties that open up when engi-neering skills are linked with the springing up in the North East, and the region even boests e home-grown mechins, the System 800, it is menulectured in Killingworth, alreedy femous in Geordie culture for its clog-shoo



NEWS IN BRIEF

ICL bid shot down

ICL's first attempt to cater the defence business has failed and the UK Air Defence Ground Environment, UKADGE, contract late, as expected (CW, September 4) and to the UKSL consortium of Macconi and Plessey, with Hughet of the US providing the computer. Some of the work under the fifty million contract wall has a arroughs and NCR share bottom pace in the first Dstapro/Com-put Weekly poil of user satis-lation in the UK mainframe mar-There were no outstanding that marks against NCR in the dwiled analysia, but although barroughs hardware and software million contract will be mbcontracted to Thomsoo of France, come out on top, the company word dramatically badly on technical support.

Commenting on the results, Batroughs says that it has been and NATO is paying 80% of it

Major centre

BURROUGHS is to establish a major European training and con-puter distribution centre at Millon Keynes. The first stage will be a 160,000 square foot residential col-lege to house 400 students.

Isher-Woods bought

LUTON miero dealer Isher-Woods has been taken over by H Computers of Kettering and will be renamed HB Computers (Laton). It will coocentrate on Sharp, Pet and ACT 800 series kit.

impcon THE headline on our story of August 28 about a version of the Imput manufacturing control system water in Cobol for Data General mediate.

A SECOND legal action against same Gamma Associates member, Karlin, is being initiated by secral Robotics of Hartford, Conceicut. This time the US was a submitting a petition for viading up Karlia Computer Services for alleged default of debts. They are completely different from the alleged debts that form he basis of the first legal action sainst the Karlin group of companies (CW, August 21). in Cobol for Data General mechanical could have given the impression has it was developed by systems hous, Bunzl. Impoon is a proprietary product of Computer Systems Development and Bunzl is a license for the Digital Equipment version of Imposs witten in Basic. Cable and Wireless most aldiary, UK Services, is a licenser for the DG version. poles (CW, August 21).

Second suit

thing steps to improve matters:

by the end of the year five new
spoot cestrea will have opeaed,
the interpolation of its field

neineering organisation is at an airanced stage, and online diag-netics is being implemented.

"All this has bappeaed since our

utine plans were revealed to our

sters group by Mr Bill Conlin, he-president and group executive of Buroughs International Group, lat October," a spokesman added.

Datapro datails - Page 17.

Rohan

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Briefing

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their say

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Magic disc

iCSYS is the magic word that Dr lene Amdahl hopes will opeo-sort for a bright new future in the is the compatible supercomputer saits, Provided that the came may late he legal snags, his new company, which is due to launch is that product in a little, over the launch are year add.

BM replacement

tonirol program, it will also run the TAM access method.

IBM adds 4341-2

Compared Tay (44)

The property of the principal of the p subsystem and four line adaptors

silbsystem and four line adaptors.
Software is separately charged.
The B5930 is the bottom model in Burroughe. latge systems family, which currently includes several R6900 and B7800 models.
The previous cheapest model in the family was the R6920 which costs 1250,000 for a configuration similar to the smallest B5900, but with 2.2 megabytes of main with 2,2 megabytes of main

memory (CW, March 6).
The B5900 has a 52-bit wide data has and a 30-bit wide control bus, and the processor occupies 17 circuit boards and 12 square feet of floor space. "Minimal sir conditioning is required and power con-

B5900 entry price slashed

which can be microprogrammed

sists of two processors with shared

WITH a simultaneous worldwide sumption is only 3.5 KVA. Etched input/output subsystem, network launch of its B5930 processor last backplanes limit the need for processor, tape autosystem, 300 megabytes on disc and a line principally reduced the entry price into tenth as many chips as the last tenth as many chips as the last data management, communicating large systems family. Burroughs has identified a partitions and transaction processing cular dual processor configuration software would add £40,000 to the saideal for the UK market. It con-

INSIDE THIS WEEK'S CW

Letters Bidding for M-200fl sales:

JOB OPPORTUNITIES PAGES 26-47

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punch your peak loads, file set-ups or regular work on 80 column cards. Peter Merrick

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Storage Tech to buy Documation

FOLLIDWING its unsuccessful of \$90 million, a formidable 53% increase over the year before. But it made a loss of \$9.5 million companies to acquire IBM compatible pared with a \$6.5 million profit a printer manufacturer Documstion. Storage Technulogy chair-man Jesse Aweida said that the Documation printer line was seen as a "outural completnent" to his

ompany's storage equipment. The two firms have signed a letter uf intent to merge under terms in Documation. This offer values Documation at \$52 million based on the \$20 value of Storage Techtology shares at the end of August.

Fastest

Colin Cook, Northern Europe managing director of Storage l'eclinology, said that the number of people in Documation in this country fitted very well Storage l'eclinology's expaosion plans for the next year, and he anticipated that both companies' product lines would be offered jointly by the two

Documation's product line ineludes the 3000 lpm Impact 3000
which is the fastest line priater
svailable, and the company is set
to introduce a high speed laser

lts extremely rapid growth. In its preference to Dublin as the localinshing year ended February I tion for its third European plant, the company reported a turnover Nippon Blectric chairman Dr.

year earlier. At the time Documation eited the cost of setting up its

the loss.
The company's oew chairmen, Richard Teate, has denied that Documention was interested in Sto-

rage Technology's offer because of its financial problems, adding that many of them had now been solved. Testa replaced Documation founder Rey Helbert as chairman about four months ago. Documation headquarters is at Melbourne, Florids, and its European operations are corrently controlled by Documetton World Trade based at Esher, Surrey.

that will give Documation share-holders 0.85 shares of Storage Technology stock for each of the 3,050,000 million shares they hold but manpower will be decider for NEC

EIRE has been chosen by Fujifau as the location for its first semiconductor plant in Enrope. The £40 million factory at Tallaght, near Dublin, will manufacture mainly microprocessor and memory devices and should create 1,000 jobs

Customer

One customer for the memory chips is likely to be Amdahl which

prioter called Laserpage to compete with the IBM 3800.

But Documation has recently been through a period of serious financial problems and management shake-ups, mainly because of last automatic and management shake-ups, mainly because of last automatic and management shake-ups, mainly because of last automatic and last own plant in Dublin for ebout two years.

Meanwhile, another Japanese semiconductor firm already manufacturing in Ireland, Nippon Electric, looks like choosing Livingston New Town in Scotland to Dublin as the local description.

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Kogi Kobayashi visited Livingstoa last week and a decision is expected by the end of this month.

The £20 million Nippoo Electric

development is expected to pro-vide 600 new jobs within four years and the two organisations bidding foe the prize are the Scot-ush Ecoaomic Planning Depart-ment, part of the Scottish Office, and Kire's Industrial Development Authority which successfully wooed Fujitsu.

Incentives

Despite fioancial locentives offered by the IDA, Nippon Riectric is understood to favour Scotland for its third factory be-cause of the greater availability of

A Commons Select Committee has recommended that the job of inding overseas investors for Scotlike the Irish IDA. The committee says this should be the Department of Trade's Invest io Britain of a series of modules written in Development Agency, the Department of I adustry and the Scottish. Recognic Planning Department as at Dresent.

BRITISH TELECOM has bought the Computer viewdata software from the London-based consultancy Joan de Smith and Parmers and a Digital Equipment PDP 11/34 to run it on, from Allen Computers International, a bureau and DEC OEM supplier.

British Telecom's research laboratory at Martlesbam, Suffolk as part of its work on assessing new viowdata techniques and in mea-

IDMS by default

From front page

from front page

[mance, the strategy study was vations on query language facilidirected primarily at housing decise, quality control, security and recomment, which provided a comintegrity of data; and the system's presenting model for evaluation prevational and long term decisitions and language and long term decisitions.

2936 in replace and of DMS and observed in the search for a composite red were petent database, are set out in separate that distributory software. Local Authority Database Software aing products.

1DMS was found to be adequate Borough of Camden.



Contact Brian Bradiay on Ascot (0980) 26212

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puters wheo it can identify a large enough single application group, such as 1,000 accountants in Lon-

don wanting a specialised service.

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1/1....

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Detarminedness of the 400 matres hurdles sprinter — Corrie Rost van Tonningan of Control Date BV ehows the wey to win at the final of Computerators on Saturdey, Bha won the Best Dutch individual Ladies title. Full report, see pages 20 and 21. the industry and its resources; the failure to recognise Europe as a single high-volume market and the

AMD follows 2901 with a 16-bit emulator chip

From Elieen Stainer, Sunnyvale, California

slice microprocessor are due in the first quarter of next year. The chip, called the AM29116, comes from Advanced Micro Devices and follows that company's AM 2900 settlements of the company's AM 2 ries, which has swept the board in the processor emulation market, being used in at least one model by almost all the world's major and outputs.

According to an AMD rage, 32 working registers are pokesman, an 8-bit slice was condered out worth the development architecture.

time and cost.
"Most people who use the slices build them up into 16-bit configu-rations, and 8-bit slices would be just another intermediate step," he

The machine, previewed in Computer Weekly (August 14), has a rock-bottom base price of £160,000 for which the user gets

1.5 megabytes of main memory, two displays one peripheral and one data communication

SAMPLES of the world's first every year for the next few years." bit mainframes as it will be to 16-bit general purpose 16-bit wide bitSales of the 2900 are expected to minimakers. AMD intends to make the 29116

family comparable in size to that for the 2900, and parts under development for Isunch with the I6-bit chip include a seque ocer and a register PROM.

Using a bit-silce microprocessor to emulate an existing machine usually involves some trade-offs between 100% software compatibimanufacturing.

Mackintosh believes that big ilty and speed. The advantages are clear if the success of AMD 2901based processors like the Honeywell Level 6/23 and the Data General Nova 4 are any guide. The AM 29116 includes an instruction set for controller applications and can be used in indus-A bit-slice microprocessor is an incommitted grithmetic-logic unit just another intermediate step," he and they can be ganged together to build Computer Weekly.

"Our bit-slice business started to build up about 18 months ago, and we now expect sales to double:

"Our bit-slice business started to build up about 18 months ago, and we now expect sales to double:

"Our bit-slice business started to build up about 18 months ago, and we now expect sales to double:

"Our bit-slice business started to build up about 18 months ago, and we now expect sales to double to build up about 18 months ago, and we now expect sales to double to build up about 18 months ago, and we now expect sales to double to be a machine with any decarred instruction set for controller applications and can be used in industrial controller applications and can be used in industrial controller application set for controller applications and can be used in industrial controller application set for controller applications and can be used in industrial controller application set for controller applications and can be used in industrial controller application set for controller applications and can be used in industrial controller application set for controller applications and can be used in industrial controller application set for controller application with any desired instruction set,

European peripherals purchasers like banks, airlines and PTTs could help Butopean-based manu-facturers by specifying a range of

memory devices and very large

According to Mackintosh most of the peripherals used in Europe ore built here. The problem is that

about 80% come from firms that are US owned. They employ most of the 75,000 people in Europa directly involved in peripheral

scale integration.

a European lab

FACED with fierce competition from US-uwned cumpanies, and threatened by the burgeoning Japanese peripherals industry, European-based peripheral manufacturers can only be saved by drastic measures like the establishment of a European peripheral technology laboratury and development contracts from big European peripheral purchasers.

These sre key points made in a atudy carried out for the EEC Commission and the three biggest duction volumes high enough 10 provide the same economies of scale enjoyed by US and Japanese key peripheral products that will be required in the future. The study comes io five EEC member countries by Mack-

volumes, two of which contain de-tailed recommendations that have been made available only to the EEC Commission, to the relevant The study asserts that attempts by individual European govern-ments to support their indigenous government departments in France, West Germany and the UK. peripheral manufacturers have perpetuated the fragmentation of the Buropean Industry The Europeen laboratory proposed by Mackintosh would be funded by grants from EEC mem-

But the three other volumes are generally evailable at £1,000 each from Mackiotosh at Luton and cover the European peripherals market, worldwide trends in peri-pheral technology and the ber governmeots and subscriptions from Buropean manufacturers takworldwide peripherals-industry ing advantage of its development work. It would concentrate on key technologies in the peripherals field such as precision eoginecring, non impact printing, thin film recording heads and media, optional data recording, bubble

Bob Willis, treasurer of the As-sociation of the European Interna-tion Industry, the body set up to promote the interests of European manufacturers, was not prepared to comment on the recommends tioos made in the Mackintos form the basis of discussions be-tween the Association and the BEC Commission. See Computerview,

 BIS Ltd is acquiring what has been described as "a substantial shareholding" in Ian Mackintosb International, the group that In-cludes Mackintosh Consultants.

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COMPUTERVIEW

PERIPHERAL manufacturing in Europe is dominated by US manufacturers because the computer industry in Europe is dominated by US firms, as it has been since the very earliest days. Sn why should the EEC and its member governments start worrying about the future of Eutopean-owned peripheral ounufacturers when it oppears to be 20 years too late? Why did they buther commissioning Mackintosh Coosullants to produce a 1,000-page study recommending how Europeao-based manufecturers can

Survive and possibly even prosper?

One of the main justifications is underlined in the part of the Mackintosh study that looks at the growth of the European peripherals market during the 1980s. It shows that shipments of peripherals by computer manufacturers to their own subsidiaries - the captive market - will grow significantly over the next 10 years, but not nearly as fast as shipments of OEM peripherals which are expected elmost to triple value nver the perind.

Nn doubt the rapid growth in OEM peri-pheruls sales, which storted in earnest with the emergence of commercial miniconsputer systems houses, will be accelerated by the microcomputer bonm end provide fresh opportunities for European peripheral suppliera to emulate their US counterparts. The big question is whether they will be able to meet this challenge.

On past form alone the enswer ought to be a depressing "No". The Mackintosh study operations.

European peripherals — a terminal case?

failed to treat Europe as a single marketplace in the way that US firms see the whole of North America as one big outlet, and so have missed out on the economies of volume

production enjoyed by the US industry. But the most worrying point made in the study is that European-based manufacturers are now in real danger of falling behind in technology, to the extent that Mackintosh sees LEC intervention in the form of a European peripherals technology laboratory as the only effective means by which European-owned industry can keep its head

The British may have failed to excel at the rather vulgar business of high volume manufacture and marketing but at least until now they have been able to take comfort from being clever technological innovators. In future they may be devoid even of that cousolation, because technology these days costs a lot of money to develop and the people with the money are the US firms with efficient and profitable more featuring. efficient and profitable manufacturing

manufscturets generally speaking have turer with the size and resources to make e significant impact on the market, has vir-tually dropped out of peripheral manufacturing altogether. To be fair to ICL, it buys from some European-owned manufacturers like the UK's Data Recording Instruments and Logabax of France, although the latter firm is now benefiting from a £15 million matrix printer contract at the expense of DRI. But ICL has been taking its big disc drives from Control Data-owoed factories for years and now looks set to atart importing 6,250 bpi tape drives from Storage Technology io the US, because CPI Date Peri-pherals at Sieveoage was unable to develop a ssusfactory 6,250 bpi drive to manufacture

> The Srevenage firm is majority-owned by Control Data, so the killing of the 6,250 bpi drive project provided a timely warning the living under the umbrella of a big, rich and eves paternalistic US company is no guarantee of long-term security. All tape drive development has now been transferred by Control Data to the US.

But there could be oo better illustration of

the points made in the Mackinosh that than the case of United Peripheral Lid, it disc drive manufacturing operation between up at Ctewe by DRI. The UK firm see forced to give Control Data substant Magnetic Peripherals Inc a 25% state to UPL in teturn for the rights to manufactured disc drives developed by MPI. The major will, it is hoped, provide employment for logical initiative to the US company relations and the control of the US company relations of the US company relations of the US company relations and the US company relations of the US company rela

According to Mackintosh the stay European-controlled peripheral mande turing today is not entirely hopeless.

Siemens builds big disc driver for a with its own systems, CII-Honeywell by manufactures cattridge disc drives iscare rating its own thin film head technological Olivetti, which is a very substantial manufactures of flowers deep drives drives and flowers. facturer of floppy disc drives for in on small systems, could become a big Ofx

Moreover, Siemens and Philips have quired substantial expertise with last tab nology —Siemens in its high speed pones and Philips with optical disc storage, that nology offering massive growth potential But rising omioously in the East has

Japanese peripherals industry, making in future for the Europeans look even no

Three in Hitachi M-200H race

IBM users in the UK interested in the powerful Hitschi M-200H can now choose between three suppliers — BASF, National Advanced Systems and Olivetti Commachine is called the 5560 and the first user in the Piedmont periods. vanced Systems and Olivetti Com-

ions of the Ispsnese mschine modified to provide what ought to be complete IBM compatibility, so Amdahl is no longer the sole challenger to IBM at the top end of its

Availability of the BASF veryou, the 7/80, was announced in August (CW, August 14) and this week National Advanced Systems unveiled the AS/9000, which is the M-200H with modifications de-wloped jointy in Japan and the US by NAS and Hitachi per-

puters, which shipped the first M-200H to a European customer lo

availability in June next year. Even in its uniprocessor form first user is the Piedmont regional

The M-200H is rated at about 8 million instructions per second and as the AS/9000 it offers 1.8 times the performance of the IBM 3033 uniprocessor while matching the power of the 3033/AP-1, 3033/AP-2 and 3033/AP. The biggest AS/9000 with 16 channels and 16 megabytes costs £2.4 million

3033/AP-1 with the same features. The AS/9000 will be able to support the three megabyte trans-fer rate of the 3380 disc drive by US by NAS and Hitachi per-sonnel.

At the same time Olivetti Com-be available in the first quarter of

ducts will be supported on the lirst AS/9000s to be shipped and Relesse 2 soon after its announced

the M-200H outperforms the biggest Amdahl machine, the 470/V8 which is rated at about 1.5 times the power of a uniprocessor 3033. In Japao Hitachi is starting to ship versions of the M-200H with two, three and four processors.

Peter Williams, managing direc-tor of Amdahl in the UK, refused 16 megabytes costs £2.4 million new three-pronged threat to Am-compared with £2.87 million for a dahl's as well as IBM's UK customer base and future sales. Full support for the IBM 4300

series instruction set and the 4300 eative mode operaling system, DOS/VSE, are provided by two field upgradable machines added to the AS/5000 family from National Advanced Systems. Called the 5000E and 5000N they outperform the 4341 by 20% and be field upgraded to the AS/5000 which offers 15% more power than the IBM 3031.

£8.5 million | ICL 'tight-lipped' expansion plans

WHILE Nippon Electric is still deciding whether or not to locate its third Europeen plant in Scotland ICW, Septambar 11) General instrument Microelectronics has announced an £8.5 million expansion pien for its Glenrothes plent.

According to GiM, the naw 40,000 aquere feet plant will be luily operational by 1985 and will be equipped with the letest fine line VLSI apparatua.

GIM et Glenrothes la probably best knawn generally se a manufacturer of chip sets for viewdate termineis and entertalnment products like TV

viewdata tarmineia end entertalinmant producta like TV
gamea and music synthaelaars.
But the Glanrothes pfant also
fabilectes chips for talecommunicetians applications end GiM
aays that it is the only film in
Europa et preaant meking ROM
chipa. Other producta from
Glanrothes include EAROMB
and 8-bit microprocazaors. late lest year sn ICL had to look elsewhere for a 6250 bpi unit. The demise of the ATS III effected the jobs of about 90 people nut of the 300 employed at the Stevenage

RAM prices cut

IAPANESE competition has caused Harris Corp to reduce ite 4K CMOS static RAM prices by

Tech tape drives ICL still remains tight-lipped about its interest in the Storage Technology 1900 series 6250 bpi ise in 6,250 bpi Group Co pany took advantage of its experiise in 6,250 bpi Group Code tape drive over eight months after talks between the two firms were Recording to produce a low cost OEM drive for use with small

believed to have sterted (CW, De-Meanwhile, ICL has started to The compact 1900 drive is already supplied to Honeywell in large OEM quantities and is understood to be the clear favourite from Logabax under the £15 million three year OEM contract that the French manufacturer won in to be purchosed by ICL in place of competition with the UK's Data the ill fated ATS III 6250 bpi drive

that CPI Deta Peripherals was de- 3). veloping at Steveoage. The Logabax units being de-Work on the ATS III was killed livered to ICL are the 100 chps 100 series and the 180 chps bi-ditec-

More bids

BUNKER Ramo, the US firm to end users in the UK by Univac and Plessey, is considering ta-keover bids from several unnamed wete teking place.
Storage Technology is by far the biggest supplier of big IBM compatible 6,250 bpi tope drives in the the aerospace manufacturet had

LETTERS to the EDITOR

The advantages of practical training

Betnard Alien (Op Spot, August 21), that employers would do well or recogoise the advantages of engaging people who already have practical training. I am glad to report that over 50 per cent of those who bave completed Thresbold contract during the strength of the streng courses during the last two mooths already have jobs, many in programming, but many more is

What some employers do not yet appreciate is that every Threshold

with my old friend George Penney, as I am with the sentiments contained in his letter of August 28 on the question of older entrants into computing.

There is no question that we can select and train older people—in fact we have done it. The problem lies not with the schools of MSC, but with employers who are reluctionant to take on the 35-plus entrant, whereas they will probably get a longer term of service from them often bringing with them and prequirements of the Inland often bringing with them a higher computer or many, this will be the only way known of achieving identification.

Interest.

ROBERT MOSCROP

Redocation director

Robert MOSCROP

Redocation director

GAYLE MaVAY

Birmingham.

PAYE principles

Was that but if things gat worse.

GAYLE MaVAY

Birmingham.

PAYE principles

CSC UK — Infonet

CSC U

degree of manurity and/or fitainess.

Experience.
Like you, George, I would be pleased to hear from any potential employer who is willing to declare his acceptance of older "hinors."

We have a number of things going

1984 and all that

than being almost continuously short of programmers, and spendattempts to poach experienced programmers from other sites,

joint committee which validates courses and isaues a qualification (now adopted by the Threshold Scheme), and is not a third govern-

graduate they take on as an training scheme, as well as TOPS operator has also done some practical and Threshold; but in contrast to cal programming, and is therefore those two, which are aimed at the available to step into the breach unemployed, the third acheme when a programming vacancy provides graots to employers lo encourage them to increase the

to Bernard Allen: Bec/Tec is a

ment training scheme.
There is a third government

I find that this is the practice of many companies, to take on operators with a view to indicate the dustry Training Boards, or for

Older entrants

them credit for the withholding tax
they have paid. The tax tystends
that do not trace where the
Expayer is working now inevitably
overdeduct tax. As one big central
index is got, yeth good day, the
filland Revenue proposed regional
computers are half way nouse. It
is a question of a compromise on
how many computer files have in
be scarcifed in order to find
the scarcif

YOUR news item on the disruption caused by the Mount St Helens volcano (GW, August 28) identified a Computer Science austomar, Carnation Foods, emong the sufferers. However, there is e brighter side to the story. Carnation uses the CSC infonet natwork sarvice to modal future production requirements aeroes several factories. When their frengh-fir factory at Mosae Lake was shut down by a three-inah ash fallout; the infonet model rapidly gave tham an alternate

IT is not often, even rare; that I on currently which they might find in myself in such total agreement of interest.

With my old friend George Penney, ROBERT MOSCROP

Cobra lives . . . MELVYN Morris of Forward Computing wes quoted (CW,

August 14), as referring to "Datas-kil's SuperCobol formerly Cobra". Cobra is a macroprocessor incorporating automatic Cobol lexical analysis and partial syntactic analysis. SuperCobol is a set of an ITB, through NCC.
GEORGE PENNEY Careers projects manager National Computing Centre, very high level Cobol extensions emented as a library of ma- cro library. cros. Cobra is used as the macro-It's an ill processor within the SuperCobol system. Both products are mar-keted by Daiaskil and Cobra Surrey. wind . .

Systems and Programming. SuperCobol is for people who want a ready-made tool to assign the rapid development of appeations, whereas Cobra is for people who have particular-requirement of a programming language been on Cobol and have the resource in

ALAN HEYWOOD JONE (one-time developer of Cobs)



Wilkes Computing

Tel. (0272) 25921 Telex. 449205

Software protection on Pet based WP system

the Pet personal computer is to be sold worldwide by the machine's poses, but changing these require makers, Commodore, in a deal that is expected to total \$750,000 in sales. The package, from Data-riew of Colchester, includes a no-rel electronic device intended to prevent unauthorised duplication of the software.

Datsview's package, called Wordcraft, can operate on the new Woclain, can operate on the new W-column Pet, providing a word processor with a normal half-page area, twin floppy discs, and Quantum printer for £4,200. The softsucceso be purchased on its own for £350. Freoch and German vernone are being produced.

To make sure a separate copy of the software is purchased for each machine in use, a special device like a small plug-top is supplied that has to be in place in the user port of the Pet all the time the

Program is in use,
The plug, known as a "dongle,"
custains a random number in a
PROM that has to match a number of functions do not match those of a purpose-designed word processor, they come quite close.

Decoupled printing and file merge are not available at present owing to lack of memory but these are being worked.

comes with the 80-column Pet, and so editing commands are given by typing letter codes.

Dataylew feels that, while

Liberal dose of new technology demanded

Oncerned that Biltain was getting let behind on hew technology. Tenhaligon's main concern, be add Computer Weekly, was that the new products we needed would she imported, paid for by North had and then, when the oil ran oil, we would discover we had lost allihe old loss and not created the new base involved in new manufacturing. There needed therefore to be a major increase in investing and a change in the sovernment's attitude.

This attitude was exemplified, link in Bridsh Telecom's 280 mile optical fibre network has been installed by the long delay over sproying money for Inmos. Com-

COUPLERS MOORE REED & COLTON
MOORE REED & COLTON
MINUSTER REGISTRATION
MINU

normally plugged. Text is divided into chapters of about 10,000 characters, the THE QUIET REVOLUTION

poses, but changing these requires opening up the machine. The dongle is easily attached to and

detached from the user port st the back, where the cassette deck is

amount that can be held in memory at one time. The key-board is the standard one that

Wordcraft's ease of use and range

A RESOLUTION calling for massive government assistance to "the new industries relevant to the 1984 of replace non-viable trades" was passed by the Liberal Party at the Blackpool assembly last week.

Party technology spokesman David Penhaligon MP said he and list colleaguea were "very concerned that Britain was getting for PAYE would be presented that Britain was getting for PAYE would be presented that Britain was getting for PAYE would be presented that Britain was getting for PAYE would be presented to "the prospective Liberal candidate for Brighton Pavillon, agreed, saying that "expecting a free market to ensure Britain's future in new technology is 'ple in the sky'."

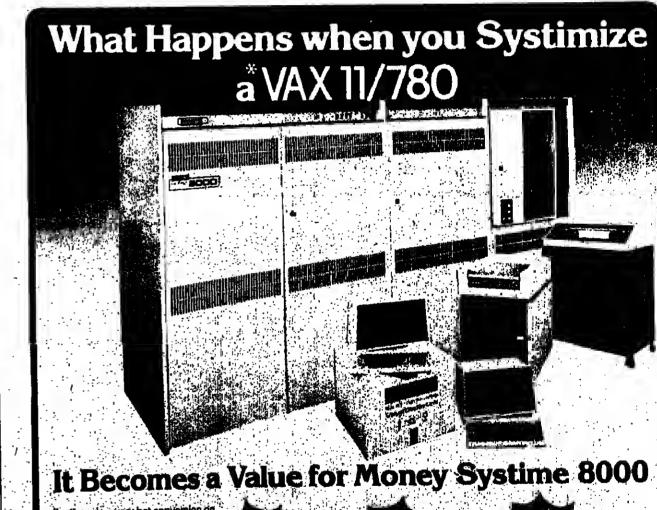
The prospective Liberal candidate for Brighton Pavillon, agreed, saying that "expecting a free market to ensure Britain's future in new technology is 'ple in the sky'."

The prospective Liberal candidate for Brighton Pavillon, agreed, saying that "expecting a free market to ensure Britain's future in new technology is 'ple in the sky'."

London to Reading. The link provides a capacity of 1,920 speech channels, pulse-code-modulated at 64K-bps.

A five-mile link between Watsall and Recombility near Recombility near Recombility.

and Brownhills, near Birmingham, has also been completed by Plessey and BICC with a transmission rate of 8 million tips and a capacity of 120 speech channels.



Systime do a very hot conversion on, a VAX 1 1/780. We call it the Systime 8000 and it gives you real value for money. You get up to 12 MB of low cost MOS memory and multiple multi-port controllers supporting tupgradeable 67 MB, 128 MB, 256 MB and 512 MB drives. The package and 512 MB drives. The package includes a choice of either 300-500 drives. The package includes a choice of either 300-500 drives. The package includes a choice of either 300-500 drives. The package includes a choice of either 300-500 drives. Manufacturing with the performance of the state of the stat

*2 x 67 MB storage 2 x 256 MB storage Module Drives

1 - 80071600

45 Ibatises drive

16 Iline Interface

10 x-Syacope VDLLa

2 x-Syacope VDLLa

2 x-Syacope Interface

VMS described 900 line per minute printers and there's a full tange of DEC competible matrix printers and VEX. 1 And of course, we include magnetic tabe drives and communications interfeces in the deal. Take a look at our VAX-PAX special. offers!

Systel unlocks the powerfol a VAX
Systel is the powerful System Tr
system that gives your VAX for prefer
processing power, security, right level
system management and rapid
system development. Adv System
about Systel and refree hight would cost you even legs!

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THIS week's example of the straings things people say in the media about computers was sent in by Dayld Kohri, of Finabury Park; who wints is a police elactronics engineer admitted in the Johanneeburg Megistraties of Court vesterday that, by applying unafring logic, a winning humbler could be determined in an electronic computerised card game played in a Hillbrow sasino of an electronic computerised machines have an algorithm, which is an electronic computerised machines have an algorithm, which is a certain of thythmic manipulations to determine the outcome of a game.

The algorithmia is a mathematical recipe for namipers, which is the key in the game, The proprantmet known the key.

Jakannesburg Tig.

companies ANE system. One only way known of achieving idencess. Companies or one only way known of achieving identical larges; computerised system in programs.

Birdpe. There never was any intaining to have online society of the intention to have online society of the intention to have online society of the intention to have online society of the panciple of one thing at a time offices. There is a for more to it than the file you see upside down when you ralse a query at the intention of the panciple of one change it when you ralse a query at the intention of the panciple of the withholding tax offices.

The PAYE system has to be able to programs.

The PAYE system has to be able to programs.

The part of the withholding tax offices. There is a lot more to it than the file you see upside down office together.

The payers in order to give their reads for the withholding tax offices.

Director, only the programs.

shipping and production schedule and saved the dey.

Director, Dilloway and Son

Flight fright

OMING back from the US in a Jumbo Jet the other day the re-marked casually as if he did this every week: I tried to turn on the



reading light for my seat. Lo and behold, the light for the seat two to my left came on.

"Aha!" thought my razor-sharp brain," "I will try pressing This I did, and the light for the seat in between came on. Finally, the switch on that seat turned on

It occurred to me that il this was the standard of the wiring in the cahin, what was it like on the flight deck?

When the pilnt pressed the hutton to lower the landing gear would that dump the fuel?

I know in these days of masa travel they can't be expected to make the music you hear in your headphones and that on the piece of paper in front of you correspond, but they might make a bit phobias by attending to detail.

MICHIE'S PRIVATEVIEW

Looking ahead

to trillion-bit

dictionaries

Downtime . Have you got

IS your LCD digital watch a rare strique collector's item? Mine is. It was made by Microma, Intel'a subsidiary, and I brought it back from Californis in 1976 when everyone here still had antedi-luviao LED machines.

People at meetings would see the two duts going on and off every second and would say, "Your watch is winking at me," to which I could only reply: "Don't take it personally."

lt's still winking, four years later, and keeping sickeningly accurste time. Herein lies its rarity, as I gather most Microma watchea have long aince died the death. Everybody who was any-body on the Coast had one in '76, but then Intel pulled out of the bsuiness, having decided it was better at making chips than

jewellery. Sensible enough: it's not quite the asme thing selling high-tech-

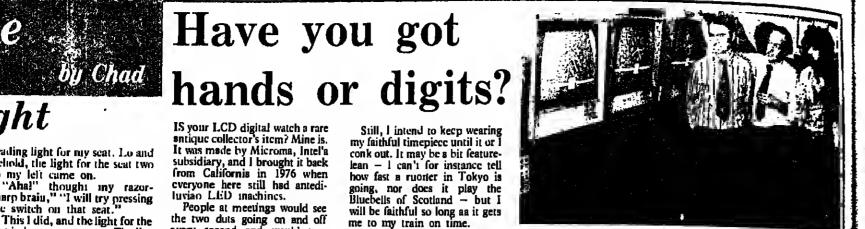
lean - I can't for instance tell how fast a ruoner in Tokyo is going, nor does it play the Bluebells of Scotland - but I will be faithful so long as it gets me to my train on time.

I'm just as glad it doean't make noises. I was aitung in a meeting with three Americans the other day when we became conscious of this persistent beeping sound.

"Is that you?" one said.
"No, is it you?" the other re-

Eventually the racket was "Oh yes, it goes off at 3:39 every afternoon," he explained offhandedly, as if that settled the

I'm still waiting to ace an LCD grandfather clock. Any aighting; like the first cuckoo in spring?



Electronic clock

THE resoon why the gentlamen in my pictura are looking pissed with thamssives is that they have succeeded in making the BBC 2 clock etclastronic. You may heve noticed on your TV ecrean a few days age — if you ever wetch it — that the clock looks different. It is now no longer a real clock with hends, with a camere looking stit; instead its

longar a real clock with hands, with a camare looking at it; instand his generated by a computer graphica ayatem.

The Beab first aterted doing this with the election system lest year. On one of the results displaye, the hands on Big Ban cunningly at themselves always to the correct time. If you think the programming for this is trivial, consider what happens when the hands see nearly horizontal. The line seen of the TV makes the hands look like the essae. Auntle's merry man have solved this with some clever and ogus circuitry that edjusts the rise time of the video signal.

The logo underneeth the clock is also generated electronically. This is rether more boring, but it takes four K-bytes of mamory to hold one logo with all its colours, even using run-length encoding.

FOCUS

Suggestions for a practical DP course

collected not only will the case atudies be of packing-case dimensions but the clearing house will

NCC is attempting to prove, centres of computing studies as Hatfield Poly will welcome the opportunity of having a ready-made source of examination material; But it is a safe bet that the ready manager to compute cours so training schedules, contemplate the cost-effectiveness of PCM polyphorous pherals, organise an appraisal of inture privacy requirement and show the managing directors as show the managing directors as the polyphorous property of the cost-effectiveness of PCM polyphorous pherals, organise an appraisal of the cost-effectiveness of PCM polyphorous pherals, organise and pherals,

place in order of priorities (or preference) the following early morning DP routhes.

Open and sort mail Open and read computer journals discovery that a two-holt company and one on a course. Also the current shortage of data prep girls and continuous stationery supplies: Compose an advert for additional DP staff prepare salary budget reviews for company accountant. Apologise ib usen department for anticipated late delivery of hada.

Discuss continuous a stationery salary budget reviews for company accountant. Apologise ib usen department for anticipated late delivery of hada.

Discuss overtime rafes for late shift working with one on holdsy and continuous as tationery salary budget reviews for company accountant. Apologise ib usen department for anticipated late delivery of hada.

Discuss overtime rafes for late shift working with one on holdsy and continuous as tation are propriate. The NCC has asked to apeculate on priate DP expressions. The NCC has asked some computation of anticipated late delivery of hada.

The academic word is a commercial DP installation as thought of place one such sear on the male place on propress meeting until nest month or beyond investigated and the place of the delivery of hada.

The NCC has asked to apeculate on spring case of the propriate of the place of the plac

Importance the need for the DP phew round the installation.

The student bas to bear in mice, the requirement of the DPM s.

Learning

top telecommunicationa exporter in 1963 to no longer being a major exporter. System X is thought to forward the production pro-System X exporting partnership Local processing

and we have demonstrated that we

are right in the forefront of the

Greater growth is expected in this market than the single terminal per line market. Mark III's growth this year is put at between 25 and

30 % in a remote computing services market valued at £100 mil-

The European service is to be composed of standard options in

contrast to the US where spplica-tions have been customised for

developed a set of packet switching protocole called INAP based on X25 and X3. In batch mode the IBM 3780 terminal protocol is

to Southampton, with the latest two opening this month in Sbef-field and Northampton. They give access to services including in-

formation storage, program generators and over 2,000 library

programs available on the Honeywell and IBM mainframes

st the three Geisco centres in the

5,000 worldwide. It is claimed to

offet local call access to 90% of the

quarterly information.

Last year grossly inflated figures for exports of analogue/hybrid

equipment under the analogue/hy-brid heading to their returns to the Customa. The problem was dealt with and the analogue/hybrid

The Mark III service now has

lion for intersctive use alone.

Systems is aiming only for a 10% share of the £100-million-a-year world market. BTS managing director John Sharpley said this may be £150-£200 million a year by the time the target is achieved. No tenders had yet been made to foreign PTT'a, Sharpley said, but discussions were being held with many of them, and BTS expected its first order in four to five months.

A trade mission had been to China a month ago, said British Telecom deputy managing direc-tor John Whyte, and there would

'Top priority for System X' call to provide it with the finest pos-sible telecommunications network. "And the manufacturing of telecommunications equipment is the case that the government did give very best opportunity for export.

It top priority."

There is a booming world market

The UK has alipped from being

An angineer shows some of the boards in the System X tendam exchange installed at Baynerd House, London.

BIS rescues Mackintosh

SOFTWARE and training group BIS has lent a "substantial" sum of money to Mackintosh Interna-

next two to three years.

BIS director Roger Grhain commented, "We were approached for help by Mackintosh and have an option to acquire the company in the long term if everything works out well between us."

As part of an agreement between the two companies, BIS will get 49% of the Mackintosh shares by the end of the year and 75% over

the next two to three years. Graham went on, "Mackintosh and ourselves have a lot of common interests - we're both in marketing reseruch and DP. In addition to that, Mackintosh has done a lot of work on the automated office and we're going to open

Nixdorf agent

AN AGENT for the UK has been appointed by Nixdorf to deal with the software products from the recently acquired Nixdorf Computer Software Company. Gerrard Data Systems of Harrow is to market NCSC'a flagship, the EDOS operating system and other asso-ciated products.

Dare you let your *VAX 11/780 Out of its Cage?

if you've got, or are thinking of getting a VAX, it's worth looking at how Systel can expand its processing capacity. Systel will give you transaction processing concurrent with other applications and a distributed processing network.

The Systel Transaction Processing System supports July Interactive transaction processing on up to 256 terminals per processor and up to 6000 MB of easily accessible on line data

Systel gives you automatic generation of multi-threaded code to reduce memory and disc access requirements, it includes centralised file management and supports front end and remote processors for efficient terminal networks.

Systel provides you with password and account access security on individual terminal locations, on individual files and records. Plus, you get fully automatic transaction journalling and archiving with fully automatic data recovery in the event of hardware failure.

resource accounting, on line management control of priorities, performance and resources, and full message and

Systel provides; a system usage audit trall plus users time and

System Development

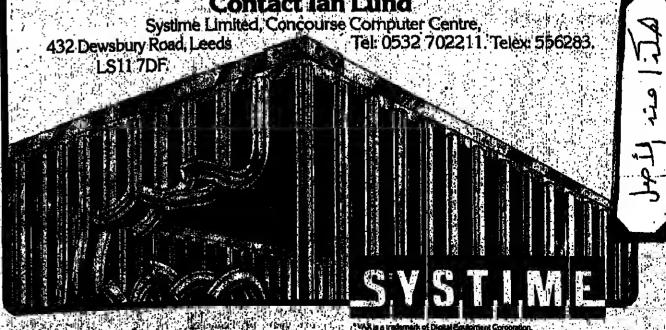
Systel ensures rapid system development with automatic multi-level menu production and high level data and lile specification which may include date validation

The package includes interactive forms and screen layout generation and a high level transaction control language, FORTRAN, COBOL, BASIC or PASCAL languages can be

Systel gives you a completely protected environment for on line system development and operator training.

By the way, a Systime 8000 computer gives you main frama performance at a mini computer price. And right now we've got some highly competitive offers available including Systel if you buy a bundled package.







of Socrates against the related invention of writing (in Plato's Phacings).

Socrates first quotes the opinion of the Egyptian king Thamus that "those who acquire it will cease to

or acquire clear and certain

possibility of using trillion-bit incmortes to construct giant random-access dictionaries of scientific facta, each containing, say, a billion question-answer pairs.

Voices will be raised against the new race of blind question-answer asswerers. Knowledgeable and perceptive people will be found as a same answer over and over again."

In short, Socrates' complaint is the reader of what he already knows on any given subject."

"You might suppose," Socrates adds, "that written words understand what they are saying; but if you ask them what they mean by anything they simply return the same answer over and over again."

swerera. Knowledgeable and perceptive people will be found measurement that writing fails to pass Turing's that an invention which so deliberation to which the ssy that an invention which so de-bases (by dispensing with) human understanding and judgment is better uninvented. Their argu-ments will be cogent, as were those

knowledge source must fool the questioner into supposing that he is conversing with a human being),

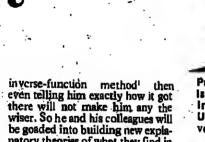
Scrapes

So, 100, will the trillico-blt

Socrates first quotes the opinion of the Egyptian king Thamus that "those who acquire it will cease to exercise their memory and become lingetful they will rely on writing low brings to their remembrance by external signs instead of on their own internal resources."

He clies Ammon signist the fallscious view that "one can transmit or acquire clear and certain and could get us himses lots as a second could guite the could be seen as a second could be seen as a second could guite the could be seen as a second could guite the could be seen as a second could guite withing the could as a second could guite withing the could as a second could guite withing the could be seen as a second could b and could get us humans into some

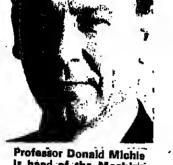
place in the continue of the second continue



natory theories of what they find in their super-tables. And this is to the good, and presages new path-ways of scientific advance, But a table of question-answer pairs is not restricted to encoding factual knowledge of this kind. The format lends itself equally

well to expressing strategies. In this case the table consists of situation-

ection pairs,
Such tables have been con-structed on a laboratory scale for



head of the Mechine intelligence Research

ystem now does the equivalent in industrial or transportation or military terms of "separating its king and its rook". "Is this a system malfunction?"

the experts sak each other. Answer comes there none.

"Expert systems" Safety lies in ensuring that the alb domains of the game of chess. Certification of socially critical it seems inevitable that people will control systems will doubtless in soon be using the same methods the end be insiduted. But legal

Defence of king and rook applying to given domains of human expertise general king and queen (no other pieces being left on the board) against optimal attracking play can only be applied in the sense of maximally delaying the inevitable loss of the took. Ken Thompson's against embedding a harder of priorities (or predict that the piece in order of priorities (or predict that the piece in order of priorities (or predict that the piece in order of priorities (or predict that the piece in order of priorities (or predict that the piece in order of priorities (or predict that the piece in order of priorities (or predict that the piece in order of priorities (or predict that the piece is priorities (priorities (prioritie

THE NCC is proposing to estab-lish a clearing bouse facility for case atudies for use in computer Contact stationery supplier Bring forward weekly PM

education and training. As over schedule 6,000 atudies have already been we to be warehouse-sized.

It is not exactly clear just what

NCC is attempting to prove. lave to be warehouse-sized.

apart from amassing large-scale standards of documentation and piles of case studies will not io-clude the everyday life of the DP

soon be using the same methods for broader task covironments. An occurrence (described in this co-lumn, CW, October 27, 1977) at tha 1977 Torooto 1FIP Conference neatly Illustrates the danger which may then arise.

Busine Complete the danger which may then arise.

Disoriented

The end be instituted, But legal requirements that systems be logically transparent and self-explain-ling will not be enforceable unless the needed advance studies are practising DPM will be invited to compile a suitable check-list, and even more unlikely that a computer student will ever encounter such a catalogue of practical trials and tribulations, some appropriate known as "expert systems" and involve applying to given domains of human expertise general

Keep in touch

his staff appraisal report, and his talk to the local branch of the BCS. Part Two of the paper would require the student to evaluate the need of the DPM to keep in total with computer technology and current pay scales. Should Computer Weekly be read from back in the students of the students in the students of front with a time allowance complete such time consumit features as Puzzier and the of

features of the average DP interest tion; especially following discovery them two bairs come.

Lies, damned lies and Dol statistics . . .

on Mark III network

10CAL processing Is about to be chains and multiple warehouses. Greater growth is expected in this

A MAJOR error in the figure for twal imports is the only outstand:

Major error in the figure for twal imports is the only outstand:

MAJOR error in the figure for twalled in the customs, along with the expension included in the quarterly information. and of Industry on sales of

mininging director Peter Benton uid at the inauguration of the first System X exchange at Baynard House in London last week.

"I may be accused of being bised," he said, "but I do not

hiak I am. It is of crucial impor-

dition to the interactive and

hach processing links it provides to the worldwide Mark III time

wied data processing service will low up to 16 VDUs to work

siler locally or remotely on what is thined to be the world's biggest

ine sharing service.

Marklink has been developed over the last two years with US users (CW, February 8, 1979) and

based on Texas Instruments 990 mes processors and TI VDUs,

is and printers.
The local processor can bave be-twen 96K and 384K bytes of

min store and between two and 20

sais store and between two and 20 negabytes of disc atore and can her toftware as well as dats haded down the line from the Mark III computer centres.

The service is designed to provide the optimum balance between canal and distributed processing,

e well as providing a solution to

the problems of worldwide data mamunications problems with a sage reference point for support. Geisco sims to compete with hadware suppliers and systems house, and to reach a higher polyme market such as retail.

computer equipment.

The Business Statistics Office at vely in Computer Weekly. They were the tesult of some export for and admitted that it had been equipment under the analogue/hyoverlooked In the ohecking mores, even the charge it showed a more important from £278 million in the charge in the computer source in the charge in the cha the first quarter of 1980 to £187.

distrible figures that made up the for total sales by manufacturers in the UK of nearly £293 million that had been added in a superscript compared with just over £271 mil-

the UK of nearly \$293 million comparing the UK of nearly \$293 million to the limit of the property of the strain import. Ingure should are been about \$261 million and the Newport office promised that the strain would be amended in the strain of quarterly statistics. The highest figures are suipplied with highest Statistics Office by

NO IODS to go to at ICL

NO IODS to go to at ICL

TOTAL freeze on recruitment that the part of major efforts to cut what he part of major efforts to cut what he company describes as a flow that the face of a strain of the company describes as a flow that the forman of the figure in the face of a strain of the company describes as a flow that the forman of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of the figure in the face of a strain of the figure in the face of a strain of the figure in the face of the figure in the face of the figure in the face of a strain of the face of the

YOU may write to the Open University for half or one full credit. Full credit courses these are quoted as course prerequisites. sellor to help with non-academic problems cost £62 per week, inclusive of bed, bord. number of post-graduates, there are two Hall credit coorses earry formightly main budies of students - undergradoates lexts and the 10 to 12 hours is spread over studying for the BA, and associate stu- two weeks. Besides the credit rating, the denis who wish to take one or more courses are divided into four levels courses independently.

Prospective undergraduates must apply fourth year. during the period January to June of the

foundation, second year, third year and

The university really is open in that no formal qualification for entry is necessary. year before starting study. So application forms qualification for entry is necessary. In January 1981 would be for academic However credit can be given for some year January to November 1982. The asso- previous study - this is assessed by the ciate student may apply from April until as inniversity for each cose individuolly, up to late as October for courses starting the a maximum of three credit exemptions.

Mare advanced currses often rely on the The courses are all designated as one-knowledge gained at o lower level and

details at any time and they will send you enpies of the BA Degree Handbrok and the Courses Handbrok Attent from a could the Courses Handbrok Attent from a could work.

A BA degree is awarded for six credits, and a course tutor. Most courses carry including any exemptions. Honours classified any exemptions and practical ground and ground and

second, lower second and third classes, tests. minimum is a half credit.

Assessment

Apart from this you can spread your credits over as many years as you like, but you must complete each half or full credit course within the year.

by the end of year exam in October/No-

fication follows after a further two credits says and practical reports, and computer nf study and is divided into first, upper marked assessment - multiple choice

The maximum you are allowed to take in any one year is two full credits, and the TMA's all of which have deadlines for submission. You must pass both the conunuous sssessment and the three-hour exam to obtain the credit.

Lastly, the vexed question of how much. The university has to raise its fees each year as costs go up, but for 1981 will be £67 for 8 full credit course, and £33.50 Assessment is two-way; continuous and for a half-credit, payable by instalments if

Summer school where spplicable will

Many employers, notably the Civil Sa

Many employers, notably the Civil Service, give encouragement and finance help to undergraduates. You can also apply to your Local Education Authority for linancial help.

In cases of real hardship the university runs its own small fund and will do its beauton help.

Addresses for inquiries are:

For undergraduste studeots - The atmissions office, The Open University, Po Box 48, Milton Keynes, MK7 6AB. For associate students - The associate

studeol central office, The Open Unitersity, PO Box 76, Milton Keynes, MX

than a

It's better

vember. Each student is allocated a coun-So you can't get enough of programming.

own coorputer at home to play programs in Basic.

With in the evenings when you The next section describes the can't get chough of programming, why not think about taking an but as a processor of instructions. Open University course?

cal courses include a home experiment kit, which in the cose of com- dato, and commercial processes. pitting could mean your own small inicro Opus, using a variant of as-

This is supplied with TM221 The Digital Computer, an introductory course which aims to give first hand experience of sinnle machine and explores the roles of soft- and hardware. It is not, however, o course in creative

Two other courses for the begipner are M251 - an Algorithmic

M251 assumes no previous ex-portence in DP and very little background in maths. The course

Many of their scientific/technialgorithms used to show computer

Overlaps

The last section deals with software, particularly programming languages and conversion front one should problem, solving. It uses to snother by compilation.

Solving research methods on a conversional research methods on a conversion front one conversion front

the other introductory courac PM951, since the content overlaps to some extent.
PM951 similarly requires no prior knowledge of computing and only basic arithmetic and slgebra.

Approach to Computing, and PM 951 — Computing and Computers. Buth of these will be replaced in 1982 by M252, also called Computing and Computers.

The course strives both to in-

The course strives both to in-form teachers who may need to use

exercises, but working up to quite sophisticated techniques. These are applied to topics of current

Importance in present society.
The replacement course M252 covers much of the same ground as both courses, but combines and revises the material:

few selected areas, chosen as typical of practical computing.
Indeed, the course is predominantly practical and, though programming is not included, algorithma are hesvily used. Numerical anslysis is also employed where it is relevant.

bekground in maths. The course computational tecliniques in their problem is open to a numerical falls into four main sections.

Classes, and managers who are feel—solution, choice of the right ing left behind by their specialist method, situations where the firmulation of algorithms, their DP staff.

Expression into flowcharts, and the One quarter of the course is tion of the results.

Systems refromance: Human particular and Systems Fallures.

T241 is suitable for students from any background and no presented and the paratory courses are occased. It explores methods of ideotifying, despectively.

Moving up to advanced levels the university offers two third year courses, M351 Numerical Compu-tation and M352 Computer Based

M351 aims to teach when a

Some prior maths ability is cribing, modelling and controlling necessary, up to matrix theory and cslculus. The university recommends completion of one of several

alternstive lower grade maths

M352 views the computer as part of sn informstion system and oncentrates particularly on datacases - their construction, orga-Numerical Computing is all nisstion, operation and usea. Much of the work is again practical and examples of s database in oction are given for London Online Local Authorities and Standard

Telephooes and Cables. This course is designed for students who have already completed some computing courses, and the OU recommend at least TM221 or M251/252.

Four courses devoted to systems are T241 Systems Behoviour, T243 Systems Organisation, T341 Systems Modelling and T342 Systems Performance: Humsn

plores methods of ideotifying, des-

holiday **students** FOR £62 a week you can have bed. Above is the Opus minicomputar which is part of the home experimental kit for the TM221 course. It has 120 8-bit store locations and a built-in 12-

lour. A series of eight case studies

is linked to systems theory ond

air traffic control, UK telephone

systems, work group atructurea in

mining and motor manufacture,

the human respirstory system,

cconomic systems, grassland

ecosystems, and a local govern-

ment system. Computer programs

ways of systems modeling

Organisation

T 243 is concerned with the or-

· T341 is about the use of quanti-

tative models to make key decl-sions and attempts to bsoish some

of the mystique that surrounds the subject. It also develops a critical approach to modelling, and raises

ganisation of human activities from football crowds to financial

and health systems.

These include container ports,

behaviour techniques.

full board, sod entertsinment a some of the most beautifully instead buildings in the UK. Indeed, your Open University course inludes a summer school commit ment, then you must strend to gin systems with a view to prediction and influence of systems beliav-

Most students are only so happy to pack their satchels and m back to school, for the week lag course at one of the traditional mi versities has earned a reputeix as the high spot of the academic "It'a better than a holiday," sy

many students and trysts are man to meet sgain oext year at a de ferent university.
It's not a restful week though With only s limited time, full at vantage is takeo of the university

facilities and the day is intensirely Tutorlais and guest lectures at held in the evening for those with tutors and students that one is eaught up lo the cothasism as

attends much more than you're ever 'ioteoded to. And you doo't slop thete. possibility, although still some way

Hectic

The social life is just as hecic. starts lo the bar after lectures where you actually meet other OU where you actually meet one to students, and swap tales of the gours of dissecting a sheep's bran for SDT 286, versus the mustal version of Hamlet just declaimed by A 101.

Customarily the evening cults with ea masse coffee in the small with each risk with each risk coffee in the small control of the real degree. The dualism is the standard of the real degree. The dualism is the small degree. "THE understanding of language in me a hamburger", there has to be speech and text is one of the areas an shility to recognise the important part "give me a hamburger" sod sort it out from the dross. This inguists, psychologists and logi- demands some understanding of

of the resideoce. The dualism has losophy of Descertes usually many to more basic lopics at the

night wears away.
But one week is enough drained in body and mind be 'super-saturated student has likely summoned the energy for the set test and one is content to drive trudge sway from the dremit apires/louming towers.

Tomorrow is a return to norm domesticity taking with a pleasant nostalgia for this test summer school. summoned the energy lot

Requirement

SOFTWARE FILE

Problems with This year's IBM seminar on teaching computer science. hoeted as usual by the Computing Laboratory at Newreproducing vision eastle University, gave the pundits of Artificial Intelligence rasearch a chance to consolidate their echievements so far. Software File takes a look at some of the subjects dealt with, which included language and vision

MAN'S most important sense is visinit. So said Dr Harry Barrow of the SRI Artificial Research Centre. He explained the problems of reproduc-ing the sense in encountered by himself and others who have tried to cieate a general purpose vision system.

The potential of a machine endoged with effective vision is immense, said Dr Barrow. Making maps, inspecting industrial parts, screening tissue cultures and analysing weather satellite imagery are just a few applications.

In the last few years some fundamental computational principles have been discovered which apply equally to artificial and natural systems, removing some of the stumbling blocks to machine in-terpretation of visual scenes.

is a great deal of "encoded information" which human vision
uses for instantaneous recognition

a bold step this year and discussed that hotbed of controversy, Artificial Intelligence. The message
which came across loud and clear was that AI has come in from the cold. The chaice of AI as a
seminar subject is itself an indication that it has gained respects hilling inventor to the cold.

Interpret

The work of Larry Roberts revealed bow the "coding" of bightness, darkness, and contrast could be used to interpret pictures of three-dimensional objects, allowing geoerstion of the scene from another point of view If the lesis on corners, shodes and perspective are correct.

Further work on sbspe recognition brought a simple but effective test using convex aod concave corners and edges. The Hulfman method relies on the realisation of line drawings derived from this test to create three-dimensional shapes where the pat-

Dr Barrow's own work relies oo mitting up a picture into elements of "coding" — light, shadow and other parameters which still need global and background knowledge to unrayed their collective signifi

By taking the different elements the interpretation of a scene. Such breakthroughs suggest that advanced applications like road traffic control by vision-endowed machines is becoming a

Bayos review of various theories in aubjects.
the field and explained that many Wilks

would you be so good as to give how cars really behave.

wrangling, there was optimism in the air with a general agreement that funds for research in the field of vision which human eyes take are becoming more easily svailable for granted, be uses each particle as large compaoies realise its eoor-mous potential. The problem of coping with so

Perhaps the only thing they have in common is the pulling apart of

things we humans take for

granted, only to find out bow little

we really understand. When it

comes to modelling io machine

terma auch human processes ss in-

terpretiog visioo and language, the

rules prove to be full of exceptions.

Optimism

The conference was very much,a

review of what has already been

many diverse aubjects was dealt with by Professor Sidney Michaelson of the Computer Science Department in Edinburgh in his closing address.

Speech is an Al battleground systems came about simply of the systems before.

Dr. Wilks of Essex University context, as do more complex sentences which "refer back" to Wilks own work takes into ac count the different points of view which can exist in a conversation. Wilks reviewed the work of the

Wilks reviewed the work of the which can exist in a conversation which can being looked at researchers who have tried to He also highlighted the need of a researchers who have tried to He also highlighted the need of a researchers which can loter pret system to take into account the sentences using "scripis". The sentences using "scripis". The accipits provide a list of contexts A system which shawered the which provide a framework for unsupport the sentence of the sentence of the sentence which are to take into account the sentences using "scripis". The accipits provide a list of contexts A system which answered the work of the also highlighted the need of a researchers who have tried to He also highlighted the need of a researchers who have tried to He also highlighted the need of a researchers who have tried to He also highlighted the need of a researchers who have tried to take into account the sentences using "scripis". The accipitation of the last of the also highlighted the need of a researchers who have tried to take into account the sentences using "scripis". The accipitation is accipitation in the area to take into account the accipitation of the last provide a framework of the accipitation of the accipitation is accipitation.

Busic Provides a framework of the accipitation o Base in the series of the seri curate information if the reason for the answer was that the maths exem takes place only in autumn — not inaccurate, but misleading.

Tooling up to prove theorems

as well as practical robotics and theoretical issues.

from the cold

Becsuse of the Lighthill hangover, the participants tended to shy away from the term "Artificial Intelli-

gence". Given the masterly dissection of the term by the Vice-Chancellor of Reading, Professor Page (one person who would not have chosen the subject) one

can understand their reluctance. He interpreted "arti-

The term has its shortcomings — it covers a wide variety of subjects and techniques to do with vision,

language, kinetics, heurisucs, psychology and occasionally philosophy, to name but s few.

which did so much to destroy confidence in the subject and cut the funds invested in it.

long-lasting principles." But, he

warned, one shouldn't throw things out before principles are established and it would, perhaps,

benefit Al to be recogoised as an

important part of computer

Coming from a problem-solving

saw computer acience as the atudy

and analysis of aystems, with the same basic aim as engineering -

"Artificial Intelligence should

be part of computer science; it will

change the face of computing.

Since computing will change the face of society then it is important

to teach people about it."\
The need for diverse branches to

rub shoulders and therefore benc

fit from oue another was used by

have separate Artificial Iotelli-

some people as a valid argument to

which can prove theorems has played a large role in the development of compoter science and Artificial Intelligence. Dr J.

Strother Moore of SRI International, the company which grew out of the Stanford Research Institute in California, presented some of the problems involved and his own solutions to them.

The basis of theorem-peacing is that, given one fact, one is able to The development of the for prove another. Reliably designolved an investigation of how veloped, a theorem prover would allow a machine to check assumptions made by humans, and verify thinking trained programmer. It

Such a tool would be of great vilue to governmental and re-search authorities, both of which show interest in Dr Strother thrown up by the theorem-prov-Moore's work. Those backing his er's check of logic and inaccorate work already demand positive re- assumptions.

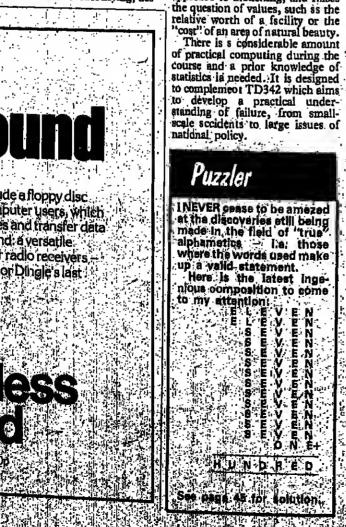
by Claire Gooding

occurrences of a particular string

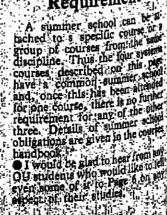
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OP SPOT

John Metcalf, managing direc-tor of FIBS, developed his first-

business system by initially

drawing up a flow diagram of the type of software required for busi-

ess applications, and theo choos-

Interactive

tion placed on the software de-

comple, to start up a manufactur-

When a job is completed the

Zilog home

study

A FIVE LESSON home study course on Z8000 architecture for the advanced engineer has been introduced by Zilog. It sometimes on the techniques of memory menagement, methods of interfacing memory and peripherels, proper hand

hardware that supported it.

Hardware picked





Andy Bone spends most of the day at his terminal using Roscoe

However, development of the package inevitably means that he has to spend a certain amount of

wards making tape mounts.
When asked if his role as a part-

time operator had changed his atti-tude toward ops staff, he said that

he had oever felt particularly an-

place. He continued, "If you are responsible, you've only got yourself to call an idiot."

The Computer Program Pro-

ducts arm of CAP deals with mainframe software products. It mar-kets 10 ADR packages and is

Spooky

Among the people at CPP there

and is supported by CDC disc

drives, STC disc and tape drivas, a

Documation unit record and Data

unning backwards and for-

Viewdala

For Professional & Business People

WILL TAKE PLACE 29th - 31st OCTOBER 1980 WEST CENTRE HOTEL, LILLIE ROAD, LONDON

Following the phenomenal success of last year's show. The Viewdata Exhibition for Professional & Business People will take the whole of the exhibition . ares available at the West Centre Hotel.

Tho event is expected to draw well over 2,500 visitors with a high number of oversees visitors reflecting the growth in this market worldwide.

The exhibits envisaged at this year's show include: Editing aquipment basic and advanced, monitors and user terminels, private viewdate systems and equipment, peripherels including printers, magnetic madia rocorders, light pens, graphic design aids and keyboards, eccessories such es camera aliachmenia, anti-glara aprays, screen hoods and masks, lelephone limers, mlorocompulars for lelesoftwore and other "umbrella" activities and publice tions, samicocducior devices and many more

iolesoftware and other "umbrella" activities and facilities, software salvices for advanced editing. publics (tons, samiconductor devices and many more.	a draughtsman and then became a CPP packages is being prepared in Cobol programmen, with Data Assembler on a maching handling filing," he says, "just waso't me," is vital that Gary Turner has a
The Exhibition Manager Min and thur has been in the Members of the Manager Min and thur has been in the Mewdala Exhibition for Explained Proping Country of the Members Proping Country of the Members of the Mewdala Country of the	she thade the move into operating the property of the property
COMPANY.	sponsible for scheduling machine
	tions general problem thandling like in whitthe handware vendors and is project in the consider ston, of future upgrades control in the local location teams in give that he like consider control ind data set placement responds to the like consider control ind data set placement responds to the like consider control ind data set placement testioned in the local control ind data set placement to the like consider the sufficient set in the control indicate set placement in the like of the like control indicate set placement in the like of the like control indicate set placement in the like of the like control indicate set placement in the like of the like control indicate set placement in the like of the like control indicate set placement in the li

Dual role for six proves a success

JOHN Binns is technical manager of CAP-CPP in Richmond, Sur-rey. "The main thing we do here," he says "Is to develop mainframe software." And added: "We Intithat due to the nature of our use of our new Magnuson M80/4 we could get the best results by operating it ourselves. Therefore, we don't have any operators as

This wasn't quite what I wanted to hear oo my first site visit for Op Spot. I had not expected that an attempt to discover the ways of operators would threaten to twist into an applications programming

Career

There are many ways an operator's career can go. It can vs! and vM — and in the lead to programming or to a afternoon it; runs DOS/VS and supervisory role in the operations DOS/VSB. Program lists can be room, and maybe to an eventual continuously updated from both management position. Alterno. OS and DOS, the major restriction tively if can lead to plain instants. supervisory role in the operations. DOS/VSE. Program lists cao be room, and maybe to an eventual continuously updated from both management positioo. Alteroatively it can lead to plain insanity. In Gary Turner's case it has led to out in the allocated time slot, an operator's rost with a broad job specification for which he is particularly well qualified.

He started his working life as a draughtaman and then became a carried of GPP packages is being prepared in Assembler on a mechicia handling.

The computer works conventional office hours and is called upon rather than in the computer room. Gary Turner is delighted that he no longer has to do night shifts and is satisfied with his relationship with the programmers at CPP.
"It's good to have people who understand the system and are familiar with such things as power-down procedures," he says.

Restriction

From a technical point of view most of his work is with JCL and operations, staff means that six of operations staff means that six of the 30 employees at Richmond are authorised to double up as operators under the watchful eye of an operations supervisor, Gary of the MVS is oot so interesting because it does oot demand so much

Logic terminal equipment.

The whole thing was up and running remarks bly qualif.

System generation on DOSTS took a total of four days, with meaning the statement of the state of those given over to planing OS/MVS was installed our

weekend, although it was transit that this was going to take large when a tape from IBM showed a n error in its distribution liter Since March there have be two hardware faults, each of the was rectified by Magnuson as neers making a board char-within two hours. Gary Tork was appointed to co-ordina machine use and the sir pro grammers learned their oper

Efficient:

perience. CPP's next move an have a processor upgrade in pit an IBM 4300 instruction set.

Development and testing the up 95 per cent of the Magnesse time, although some batch work considered as a possibility for is

working on the development of the Improve family which is designed to maximise efficiency in OS and Programmer intervention doeso't usually amount to my more than mounting the har a getting a quick printout As k is not a production environment there is no real call for a full max

seems to be an almost spooky de-gree of unanimity about the virtues of the Magnuson M80/4. It is the list machine of its kind in the UK CPP has hit on the most efficient compromise hy spreading the monsibilities around and demand ing that its programment under stand ops and by appointing a operations supervisor who per-



to fit software now, not the hardware. This point required to do is to answer questions and confirm atatements in a simple interactive manner. Single-line dialogue is incorporated for System design used to involve

the development of a piece of hardware, and following this, softsimplicity to the user.

The software is supplied in 165 ware to support the hardware. Now, because hardware design has totally interactive programs com-piled from Metcalf's flow charts hy management consultants Coopers & Lybrand. Written in extended imost reached perfection espabiliies, the roles should be reversing themselves. Hardware must be Microsoft Bssic, it is stored on five separate discs (four program and one dats) and can run on 64K of RAM from any combination of hard or thoppy disc drives. pecified within a system design minarily to support the software.
An example of this theory put inte practice is a buefacese system. that was launched earlier this year by a newly formed Birmingham-based company called FIBS, Fully Integrated Business Systems (CW,

At the moment it is a single-user

system but FIBS is developing a new package in multi-user Basic to provide a three-user capability.

Thus, the hardware required to support the software has been defined in terms of memory capacity and flexibility. The system must have 64K of RAM and a dusl

floppy disc drive, and preferably have a hard disc drive and a multiuser capability.

Metcalf made his choice around

The high degree of concentrathese specifications with a hsslc consideration of system reliability.

relepment brings it up to a level comparable with the hardware, The hardware system he chose to support his software was the Data Terminal and Communications MK10 microcomputer, which is based on Intel® 8080 8-hit and together they produce a com-Metcalf's claim is that this is the first time any company in the sold hat produced totally interact live software packages within a business system. To the user it processor and has 64K of user RAM. It incorporates twin floppy drives of 315K-bytes each, with mesos that no manual transference optional one or two 10-megabyte hard disc drives and 8K of system ROM. With three I/O ports it costs £4,576 prus £236 for a fourth. d data is occessary, and current stations of rollt, loss and balthe stations of rollt, loss and balthe stations of rollt, loss and balthe stations of the software destations as basic rule of auditing: asthe plus expenditure must always equal income plus liabilities. For The hard disc drive and interface is an extra £3,042.

Printers

ng business, the company needs to borrow, say, £1,000.
This implies equal liability and DTC also supplies a range of four printers compatible with the MK10: the 200 RO printer, which costs about £1,700; the 302 RO When stock is bought, the the Metcalf's business system will printer for about another 230, and the 382 T and V printers, which from double-entry book-keepcost about £2,200 and £2,700, respectively. Metcalf chose the Hazeltine 1500 video and key-board for £765. ing to ensure that this happens. The sales ledger is linked within the software to the purchasing

Each -software package costs £750, making a total of £5,250 for system automatically reduces the twe material file and increases the finished goods stock file. Stock the complete set of seven pack-ages. An optional word processor is available for £250. So a typica and work-in-progress are posted-attematically as closing stock to price for s complete system is about £15,000. Similar competitive husiness systems that seem to lack the simplicity and flexibility of the FIBS system are more than double this price (ICL has quoted £35,000). Metcalf sees "very little.

> meot. PIBS also provides customers with tailored systems to suit specific requirements for a basic £500 extra per system. According to Metcalf this is very much in demand as there are so many posarising from several existing and new types of businesses, British Leyland is showing loterest for its BL Systems network of dealers.

Multi-user CP/M Total service

multi-user version of
system CP/M is now
idiac for the Croidiac for

and work in progress. Disc one takes care if orders, stock and security disc two, the sales ledger; disc three, the porthase ledger; and disc four, the nominal ledger and the payroll.

To complete the total system of producer on the service, PIBS provides with every sale a thorough installation and maintenance service in six weeks the company carries out for the chief a pre-survey a proposal, a final survey and implementation.

being present for questioning dur-

service by providing a telephone answering service and then run ning a diagnostic disc through the faulty system to detect the proh-lem area. Any hardware problems are directed to DTC, and software problems, if they occur, to Coopers & Lyhrand.

Dealers sought

The type of hardware service provided is an eight-hour response time at a cost of 14 per cent of the system value a year. Metcalf hopes eventually to have one service engineer for every 14 systems installed. Coopers & Lybrand offers a £200 a year insurance back-up service, but this is not recommended in the FIBS pack-



driven; and these can be altered. Metcalf is currently organising a six-branch dealer network throughout the UK. Potential agents are vetted closely and must be able to talk in accountancy language. Reeves Computers of Car-marthen has aiready been sppoin-

ted as dealer in Wales, but Metcalf is still looking for dealers to cover Scotland, the North East, the North West, the South and Lon-

But plans do not stop there. For the future, the FIBS business system will be faster. DTC is ness systems market.

ble with the FIBS software, the MK10 and the original Microfile existing systems in the small busi-

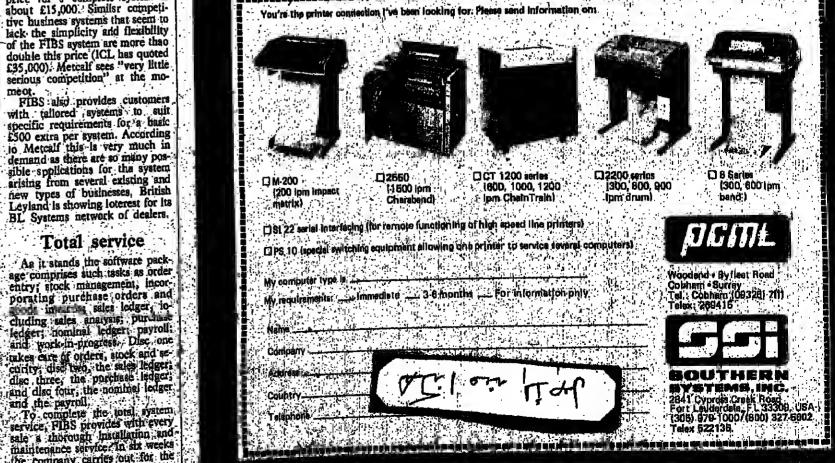
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PEOPLE and EVENTS

IBM names new director of data processing

Born in Glamorgan and educated at Llandovery College and Trinity Hall, Cambridge, Morgan served in the

IBM UK has a new director of data processing. He is Peter Morgan, who succeeds Tnay Cleaver. Morgan is returning from IBM Europe, where he was group director of data processing marketing.

Born in Glamorgan and educated at 1 trainer. He held several line and staff management positions in data processing sales director in 1971. He became group director of data processing marketing for IBM Europe in 1975.

BETA jubilee awards

THE Business Equipment Trade Association is 10 mark its diamond jubilee by making two special awards to the business equipment Industry.

Prizes in the Personal section will be 1500 for the winner and 1300 for the manner in. The Company appared will

runner-up. 'f be Company award will consist of a truphy and s symbol for the company's use on letterheads, litera-

A THREE-DAY INTROOUCTORY **COURSE ON ADA**

a) the Repartment of Computing special College London, S.W.: £102 Call **269** 8111 x 2742 for datate

Cambridge, Morgan served in the Royal Signals as a second lleutenant. In 1959 he joined IBM UK as a sales Society and the Institute of Marketing.

ture and other promotional media.

Entrants for the scheme will be indged on criteria including expansion into new markets overseas, initiative in exports, the provision of trade literature in appropriate foreign languages and the re-design of products or packaging for particular areas.

The awards restricted to members and associate members of the associate members.

and associate members of the associa-tion, will be announced in the spring of 1981.

For further information, contact Richard Harington on: (01) 405 6233.

Peter Lloyd has joined A&A consul-isnts where he will speciolise in execu-tive selection and recruitment in the data processing/word processor sales field. He was previously a divisional manager at Flodge Recruitment.



David Spices, divisional manager of Computer Autometion's Commsrcial Systems Division, is shown at the controls of hin Piper Comence 260. Spicer and his co-pilot, Victor Scrivens, have just echiaved third piece in the Kant Ms saenger Air Race. This was Spicer's first race, although he has been flying for seven yeers. The teem's next competition is the Kings Cup which takes place on September 20 et RAF Finningly, Yorkshire, and is aponeored by the Daily Telegraph.

MD for ITT Semiconductors

LUBO Micle has taken the position of managing director of ITT Semicooductors World Wide. He will be responsible for the company's activities, which encompass 3,500 employees and five plants in the US, France and West Garmany.

Germany.

Micle joined ITT in 1959, after gradualing from Belgrade University. His first post was quality control engineer at Intermetall, and in 1967 he became manager of its application laboratory. Between 1968 and 1974 he was product manager responsible for new product development and introduction. From

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Ferrantic Control of C

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buy, installation costs low PT7/can be expanded and upgraded to keep

alternative,

pace with your needs. It is backed by the full Ferranti rapes of Supporting

services.

1974 to 1978 be managed all ITT Semiconductor's sales in Europe as

sentenductor's sales in Burope as marketing director.

In 1978, Micic was appointed director of marketing and business development for ITT Semiconductors World Wide, assuming the added responsibility of director for Intermetall in 1979.

Gordon Essex has left his post as marketing manager for George Salter and Company, to join the interconnec-tions systems division of Tekdara, as marketing manager.

Staffordaire Polytechnie.

Wynne's robot was purpose built for the project, and its key component was a Motorola 6800 microprocessor unit. The robot could operate at various speeds, carrying a small payload and was able to follow a dark line on the floor, automatically steering away from walls and obstructions.

The sward for the project was given The award for the project was given by BIS Applied Systems, to encourage undergraduates in their practical

course work.
Two other cash prizes were awarded. The second year prize was won by S Crothers and the first year prize by A Farrall.

Golf win

of 92 points over the course at Bury St Edmunds Golf Club, ICL achieved

ichener, an electrician.

ICL has now qualified for the national final which takes place from October 24-26, at Gleneagies Hotel,

A PROJECT to design, construct and program a self-contained robot won a prize of £50 for Michael Wynne, a linal year student at North

Winning

robot

John Farthing bas been appointed general manager of Geest Minicom-puter Systems. He was formerly mar-keting director for the micro division of ACT.

Roy Hamilton has become sales manager of General Computer Systems UK. He joins from Rediton Computers where he headed its UK field mar-keting organisation for three years.



first place by virtue of its score over the last nine holes.

The team members are Frank Ward, a personnel officer, Frederick Mumford, a section leader and Ray Kitchener, an electrician

PA senior consultant

ALAN Hetherington has been a pointed senior consultant with I Management Consultants. He idea the company in 1977, and its Fellow at the Institute of Chartered Accombinated an Associate Member of the institute of Management Consultant.

Tamilie Honey has been existed. Tamisie Honcy has been appointed the newly created post of product manager at Advanced Business Technique

Football tournament

arc three titles ro be won: Best mas Leeds; best team in Mancheser, so the War of the Roses Trophy.

Those interested should cased in Bacon, CPR Consultants, 12 Medy Street, Manchester M2 3AQ. 7a (061) 228 1354.

Data Logic has promoted Richard Slogrove to sales manager in in year processing division, Central Logic He joined the company in 1979. grove is a former squadron leads a the RAF, and a member of the lea-tute of Purchasing and Supply.

Seven months after joining Systems as area sales manager in Bristol, but Packwood has been promoted to re-

Liveware File .. BY HIGH SPEED THE I WENT TO THE NORTH OF SCOTZAND .. FOR MY HOUISHY! YES - JUDGING BY THE DID YOU HAVE TO TEMPERATURE, AT CHANGE? JOSEPHSON JUNGIN . Dor

DIAR

SEPTEMBER 24

OCTOBER 13-14
Settling, Digital communications for stelling, Technology Transfer Society Musics, (01) 242 4045
Settling, Technology Transfer Settling, Technology Marketing Society of Affectics/ITS, Leader, (01) 442 4045

SCHOOL AMERICA TES. Landon. (01)

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OF TORRE 23-24

OUT 18 Stellief communication.

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OCTOBER 29 British Computer Society Land Polytechnic, Coventy 14 24166

New technologies for information retrieval. BCS Information Retriéval British Computer Society, Landen.

OCTOBER 6-7

Seminar. Digital communications for suellites. Technology Transfer Society (TTS), London. (01) 242,4045.

OCTOBER 9-10

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Seminar. Digital communications for Seminar. Digital communications for suellites. Technology Transfer Society. American. (01) 242,4045.

837 3636

COMPEC 80 off fall professor Nevember 48 of Completing the London. The excitation is off a professor and a professor

lost ground in WP THE IBM Displaywriter word processor has arrived in the UK cally expandable to a megabyte on the 8086 - so all the floppy space space. Salesmen are to be enes than two months after its US ia available for text. couraged to propose the most appropriate solution to each cus-

Communications are at present

tomer regardless of which division

Opportunity

The 5520 and the Displeywriter

5520, but only through a commu-

The statement gives traces the

opportunity to press the company

to provide what they really want: it

is musatisfactory that while the 5520 is clearly a more attractive

DPD and is a true SNA device,

users who want to manipulate data

on the 370 host under, any, TSO

the software on an 8100 under the

DPCX operating system.

nications port.

IBM making up

mocessor, built around the Intel confined to asynchronous or bi-synchronous, but SDLC is in the ·A minimum working configuration costa £5,000 plus £9 a month for any one of the five standard software packages offered, and first deliveries are set for February

Attractive -

processor hardware based on that

of System 34. Disc space extends

It is internally a true SNA device, although bisynch is also aupported. It takes up to 18 worksta-

tions; up to 12 printers, all of which at present have to be 5258

ink-jet printers, based on the 6640 from the Office System 6, although the latter is not directly attachable; and up to 16 commu-

It is an attractive system for electronic mail, featuring store and forward, auto call, auto answer,

distribution lists, priority and particular time of day letter dispatch and delivery confirmation.

Most noteworthy feature of the 5520 from the user point of view is

the extraordinarily comprehensive set of prompts which are available

which can be called up at the press

involve changing the wheel on a daisywheel printer.

Next year

Since the only printer available

to 130 megabytes.

seal rate of exchange, but atill very competitive indeed. At the same time, 1BM's Rolls Royce of shared logic word processors, the 5520 (see picture), based on the processors used in System 14, has been launched a more usual nine months after its US de-The 5520 is not user program-mable, but the 5525 controller uses

The two products spearhead IBM's drive to make up lost gound in word processing, parti-cularly in the US, where it is a ckar number twn to Wang (CW, June 26).

lounch. The standalooc word

price of £5,000, about 50% higher

than the US base price at the pre-

Striking

The elements of the modular system include the display, tiltable 20 degrees and rotatable 30 demes, separate keyboard, single or dual floppy drive and two printer options: a 15.5 chps golf-ball and 40 or 60 chps daisywheel.

Technically the most striking

feature is the 50,000 word dictiosay, which by use of an amazing algorithm called Alpha Word Vector chops words up into prefixes, and delivery confirmation.

Although it is an SNA device, using SDLC Internally, only limited support is given for access to databases on IBM host maintages for 500 user-defined words, he dictionary is available in English, American, French. German. sh, American, French, German,

Italian and Dutch. Once a document is prepared on be dictionary which highlights all words which it does not recognise.
These will mostly be mis-spellings.
and proper names, and the perator can go through and cor-rect them and call the dictionary of the "belp" button.

spain to ensure they are correct.

It is, or course, only an aid and
cannot supplant careful reading through: it will not pick up words united altogether or errors like "now" for "not". The Displaywriter — like the 5520 — has a green display, 25 — like, with facilities to move text

forward and back, to copy, to lo-cate a particular word rather than having to find it with the cursor. It des a system checkout on switchon and puts up the IBM logo when

Asynch or bisynch

Printers can be shared by up to three Displaywritera, each of Phich has to have ita own local processing in the UK.

This says that over the next three years, freedom to mix and processing proposes into the minimum 160K-bytes of main memory, theoreti-bytes of main memory, theoreti-

Mailbox service

EUROPE'S first publicly available and processing mailbox service is being flucted that week by Service with the internal donat collection for the mail of the mail

Ferranti firm FERRANTI Electronics has signed an agreement with Supertex Inc of California to manufacture VMOS power field effect tran-

These discrete devices will use a planar vertical VMOS structure, a design approach which climinates problems created by V and U groove techniques. Electric fields at the bottom of the grooves limit breakdown voltage performance.

Application oreas include microprocessor and logic inserfac-ing where VMOS high power gain allows direct interfacing to high current/high voltage loads, switching nower supplies and power output stages for midlio fre-quency umplifiers.

Ferranti's Brien Down says, "The company has a commitment and intention to stay in discretes." According to a recent report, where the American designer will use a big chip, the Eurnpean counterpart will try to notimise by using the full range of available pro-



to explain to the operator exactly how to use the machine. These run to 2,500 screen pages is the ink-jet, the operator la able to call up a wide variety of type styles and spaces from the workstation. In general this would The 5520 is by no means cheap: system with 29 megabytes on disc, four workstations, and one printer costs £46,000. No software prices are given. Rirst deliveries are set for the second quarter of next year, and an additional files, processing facility will be available in October 1981. IBM has also now made its TELEX STATE GENERAL COMPUTERS SYSTEMS (UK) LIMITED Onion Park, 226 - 236 Northfield Avenue TONDON WIB 9QU Telephone: 04-579 9401 Telex: 937356 GUSLON Send that one on for more information on the First and Lest Spainess Computer System You will Ever Need. MANR COMPANY A the second se

by British Telecom

announcement

scrutiny by the meny experts parti-cipating in the Montreal preeting

here the standards were adopted. There was a clear inference that

Canada feels slighted

econd-hand

EC MM1 IDP 16K Word Core

PLESSEY PM1118 16K Word Core DEC MF11U 16k Word Core

nd Backplane JEC MM1 fU 16k Word Core Add in Memory for MF 11

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7825 8 Line Senal Interface

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as an input/output and inquiry tar-minal for the Saloma (dapot self-sufficiancy) systam. A viswdata tarminal is in the beckground.

Companies come to the aid of the Army's intelligence

by Paul Fisher

GROUCHO MARX once commented that military intelligeoce is a cootradiction in terms.

The Directorate of Supply and Computer Services, DSCS, of the Royal Army Ordnence Corps wants to apend over £1 million to prove that the remark le not true so far as the military's computer intelligence is concerned.

in the event of e-major compute fallure. It bolds datals of 17,000 and 20,000 of the Army classified vehicles are not be cluded.

Four of the Ocelot demonstratelligence is concerned.

The DSCS has been ataging e ten-dey demonatration, named Ocelot (Operational Control Envisonment for Logistic and Office Tasks), to show off the capabilities of existing computer province descriptions. of existing computer power and to prove that further expenditure is justified. The exercise brings to-gether ten inter-releted manage-ment information projects which are designed to cope with normal and emergency supply procedures.

Thin budgets

Although the overall military budget has been increased by 3 per cent in real terms, individual units find they have to convince MoD top brass of a scheme's validity before any money is forthcoming. Additionally, there is a three-mooth moratorium no military expenditure which still has two months to one. months to run. Brigadier Lawrence, nf the

DSCS, says: "Expense budgets these days are thin. Therefore we

these days are thin. Therefore we try to test out the practicality of our systems before putting any proposals to central government."

Ocelot is a demonstration of such a proposal. What is remarks ble about it is that it largely being staged with borrowed equipment, whether in a apirit of unbridled generosity, or due to a judgment that orders will eventually be placed, ICL, Systems Production of Farnborough and Radio Rentals have losaned the Army a considerable amount of equipment in support of Exercise Ocelot.

To secure a dontract worth 21 million at list prices ICL has leot \$120,000 of hardware. This includes two 7502 cluster display terminals, six VDUs and two 7700 word processors which are used for the production of briefs and reports and the screening of charts. An ME29 computer provides a visible and the screening of charts. An ME29 computer provides a visible which it had been mountained as visible and the screening of charts. An ME29 computer provides a visible which it had been mountained as visible and the screening of charts. An ME29 computer provides a visible which it had been mountained as visible and the screening of charts. An ME29 computer provides a visible which it had been mountained as visible and the screening of charts. The scope of the production to the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of Lt-Cal Bento, with the movement of equipment in the words of the w

tions, with the acronyms Show, Silver, Astrid and Roland, are apported by a mainframe site the end a half miles away from the DSCS Greven Hill headquarters Arncott. The sile has two Kings and t

1900s, e 1906A for classified in formation end e 1904S. and contract costing and handling 25,000 club members' records. Of particular interest to con-Upgrade work will be dealt with mercial users is the Astrid description. It works in conjuncted with a TP monitor to access in house using NCR conversion programs. John Proven of the JT update information concernit

Much of Ocelot lausing the fits million. Crusader exercise is to backdrop. It is supposed, for the purpose of some demonstrates, there e ten-wagoo train carries ammunition has exploded see I place called Bad Bright. Thus, is example, Astrid is able to lessing possible causes for the actions.

There are two supporting fer and Safari. Coffer is I A



Installed in Britain hee baen commiseined at the Netional Waatminetar Bank's computer centre in Kegworth, Laicastarehira.

The Etiopou Charide Filead bettery's part of an uninterruptible power supply from Anton Piller of Cirencester, Gloucestershire. The battery is able to support all the centre's essential functions for five minutes until suxiliary genera-

tors era brought on th full Inad.
The National Weatminetar's Kagwarth centre
housas three IBM 370/188s which run a number ol applications including branch accounting.

Part of the SWTP hardware for the ABIES patient repording system

Upgrading

to NCR

1-8430



Helping the GP

A PATIENT recording system for general practitioners that should help them ensure that regular treatment is always earried out when needed, has been launched by ABIES Informatics, using South West Technical Products hardware. Optional extras include word processing and the Mickie patient interviewing system devised at the National Physical Laboratory.

The ABIES system does not record the doctor's ootes, but here registration details and sets. alternative schemes may be consid-

keeps registration details and acts as an index to the written files. In addition, up to 64 "charecteristics" for each patient are recorded by the doctor on a card, detailing certain diseases and conditions that oeed to be checked regularly. These are entered by a secretary into the system, and eutomatic re minders are then produced.

Doctor pays

The smallest configuration, with floppy disc storage for 6,000 patients, coats £6,000, and a system with hard disc, daisy-wheel printer and Mickle costs £9,500 and hes capacity for 65,000 THE Bristol-based JT Group is planning a move from its current NCR I-8250 to the more hefty I-Ack 1-3250 to the more herty 1-3430. Delivery of the £113,000 peckage is scheduled for October 1 and the system is expected to be maning by mid-December.

The JT Group is a construction company which also owns five residential country clubs. It uses DEC PDP equipment for company

atients.
Future facillates will include a prescribing system which will print out and keep track of prescriptions, and "event recording" to help analyse a GP's workload and provide data on the spread of PDP equipment for computer-sided design work and NCR equipment for administration and

The 1-8430 has a 512K mamory as opposed to the 128K of the 8250. It will take on accounting The purpose of the system, according to Tim Beoson of ABIES, is to help the doctor with clerical staff are largely paid for by the Health Service. The equip-

the GPa themselves.

Mickie is heing sold under licence from the NPL (CW, June 12). The WP package is Autotext, elready in use with SWTP micros.

Group reckoos that conversion should take an average of half an hour per program. "It's a simple migration," he says. System that speeds up courts' administration

CRIMINALS in and around the Oxford area are finding life much harder and the strong arm of the law even stronger these days.

Oxford Magistrates' Court has installed so Allied Business Systems Police end Magistrates' Information about the defendant and alleged offences is entered by police and court staff oo a questloo-and-answer basis and may be undated at any time up to

Based on the ABS Multihus the day of the hearing.

After the hearing, court staff the editire administrative process, from booking the defendant at the police station to his eventual and adjournment notices are processing in court and the enprinced and credit and debit accounting details are set up.

The systom at Oxford lines fees maintenacte and so on

The systom at Oxford lines fees, maintenacte and so on are held by reference number or are held by reference number or

Bunzi denial are held by reference number or name, and money received is allocated far more quickly than on a manual system.

Buzard, Bedfordning, lias asked us to start their in laber woods and his made no lid to their liquidators. Robson-Try.

Company.

In our, Issue of September 4, we have a burn as one printer companies and burn as one printer companies. Startistical Yearbook as available for mistrand in laber, woods, which has low been secutived by HB Loupupers.

It strengs (W. Saptember 11).

Given the same of the same of the same companies and manual systems.

We arbook

THE Council for Murual Economic Assistance (Comecon) 1979.

Startistical Yearbook as available for succession of the same companies. Startistical Yearbook is available for Startistical Yearbook.

Settering (W. Saptember 11).

GINE, Tel. 01-837, 3636.



CANADA'S Department of Com-munications has complained to liritish Telecom about its an-schemes for their viewdata trials or nouncement on the adoption by Services. CCITT of the UK's Prestel and The D France's Teletel viewdata systems as international standards (CW, July 3). The DC said the announcement for research and demonstration The DC said the announcement implied that Canada's Telidon Database access Replying for British telecom, deputy managing director John Whyte told the DoC in a telex mes-WEST Germany's Bildschirmtext its market trial at the end of this sage that they had misunderstood the press release and denied that it

tely operated databases, following contained any errors of fact.

Whyte said that two standards hed been adopted for alpha-mosaic delivery of computer networkin software providing X25 and 188 systems, but under slpha-geometric systems Telidon had been cited as an example. He pointed out that as Telidon had not been proved in the field it had not been subjected to the same degree of 3270 communications protocols developed by Systems Designers to run on the GEC 4082s in Dusseldorf and Berlin.

Extended

350 branches. Autobank provides 24-hour online banking via teller units linked to eight computer In contrast, 10 telecommuni-





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COMPANY NEWS

Controlling the money problem in an anough

THE government's long-term aco-nomic strategy is baginning to look like a reflection of the hoery old chestnut nhout the Irishmen who, whon asknd the woy to en ahtruse destination, edvised, "if you want to get there, sorr, I wouldn't stort from here."

The policy to control the money supply is closely working partiaps rother too florcely and nthur ton well on the privata

COMMENT

sector, but the overall alm, which is to get initation duwn to low single figures, looks as fer oil as aver it did.

The most significant alogie ela-mont which is pushing in the op-posito direction is the public sec-tor, as talecommunications usors, commuters and envone who has to poy o gas or elactricity bill knows to his cost.

Privota sector price riacs, whather directly os a result of gov-amment pelicy or simply on a re-sull of the recession, are moderel-ing rapidly, and anyone in the lortunato position oi heving ony apare cosh can heva e fiold doy in tha high street.

But bacausa the most nationslisad industrias con only re-main solvent by either increosing the monoy supply by odding to government debt, or putting up their prices, the government's strategy insists that they heve to do the latter. Yet the public utilities represent such e substantial olement of the retail price index, which although inadequate is the only measure we have of initiation, that their price rises can concel out

Few paople would now deny that netionolisation of steel and shipbuilding word monumentel mistakes from elmosi any viewpoint, making the teak of gov-ernment of whatevor complexion well-nigh impossible.

Until the Post Office, the public utilities end industries like simply like simply like graph and so forther operating like genuins commercial organisations, the "experiment" with monetariem is bound to appear to fall without ever having had a genuine test.

will be in the Grand Hall



Delta Data Systems, the program-mable display terminal manufacturer, has set up a subsidiary based in Brussels to cover the Benelux countries. Called Delta Data Systems Benelux SA, the sub-sidiary is Delia's first in Continental Europe and will concentrate initially nn sciling the Delta 2830 which emulates Burroughs TD830 displays with additional features.

The 2830 lias been chosen as the first product mainly because its installation does not require systems assistance for the customer. In addition there is a high level of demand for the 2830 bccause it can he supplied immedi-

The Benelux subsidiary is currently being provided with full technical, cummercisi and marketing support by the Delta Data Systems UK subsidiary.

THE LEADING EXHIBITION

OF COMPUTERS, PERIPHERALS AND SYSTEMS

Delta is still represented in the rest of the Continent by distribu-. turs, elthough Delta has long-term plana to set up subsidiary cem-panies in France, West Germany and other countries.

New broom at

IN the wake of disappointing results for its financial year ended June 30, printer manufacture Centronics is undergoing substantial re-organisation at the hands of Michael Kaufman, the manuscript took over as president in April. But Kaufman has not touched the Centronics organisation in Europe which now accounts for about 40% of total worldwide turnover and which provided most of profits in the last fiscal year.

presidents, three of them being men brought in from Raytheon and Xcrox to fill the new positions of senior vice president of operations, senior VP finance and VP nf

In additioo, Kaulman has divided the company into three product-based greups. They are the microcomputer printer divi-sion, which embraces the 100 chps 80-column 730 series isunched s year ago, industrial printera, which covers the faater, more expensive unita used with minicomputers, and the Quietwriter divi-sion which is devoted to the innovative low-speed word proces-sor printer first described last year (CW, November 29, 1979). Qui-

Fenner Xerox Corp executive etwriter employa a stylus print Kanfman has named six new vice head which forms charactera in a similar way to writing with a pen. It should be launched in the first half of next year, probably at the National Computing Conference in Chicago in May.

Centrenics is also developing faster printers for the word processing market, employing print heads with a high density matrix. Centronics figures for the year

ended June 30 include net profits slightly down on the previous year at \$18 million and sales up 8% to around \$130 million. The company's dull performance has been blamed on technical problems with the 730 series printers which built in Japao by Hitachi.

forced Centronics in the US; close down the production lies these units for a period of about weeks earlier this year, in ail tion, the US side of the company burdened with most of the confi developing products like Qie

Production of 730 series mi now stands at 350 a week and the year's projected total output feet

The industrial printer division manufactures the 700 wits of high speed matrix units and to 6000 band printer family whit incorporates print mechanism

Kode aims at £10m turnover

ANNOUNCING grosa profits of Caine were likely following the £662,405 on a turnover of £4.62 millioo for the first 24 weeks of 1980, Kode International says that it is confident that its turnover will the remaining personnel. Seed top the £10 million mark this year. them were still involved in but

But according to a company apokesman the capital goods divi-sion of Kode which builds and ells computer terminal equipment has now been overteken in tumover by the components divi-sion. The latter consists of PC board manufacturer Kam Cir-

board manufocturer Kam Circuits, and military equipment
builder Moore Reed.

The eapital goods division comprises Kode Ltd and Kode Services and a major source of its
revenues now is the XL/40 multiterminal key-to-dise system built terminal key-to-dise system bullt in the US by Pertec. The Datavet data entry system built by Kode itself at its factory at Calne, Wiltshire, is being phased out.

But the Kode spokesman and that no more redundancies at seale.

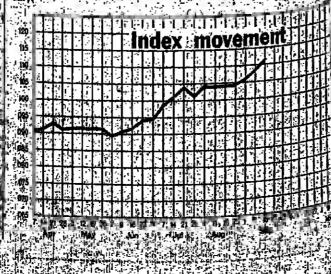
year (CW, March 13) beaus there was still plenty of work ing eard puoches and a lot with busy extensively modifying Teletype ASR43 matrix print terminals that Kode supplies be Department of Health and Son Security. fo addition there wast customising of XL/40 systems suit individual customers.

Knm Circuits, which is in based at Calne, is now its insign growing part of Kode least tional. It manufactures PC base for enatomers that jochide Pies GEC and the Post Office and men computer companies with me facturing operations in the UK. Karn is setting up a multi-layer K.

CW SHARES TABLE

۱	Pe	nge ,	London Stock	Pa	DCS	. \$		Hay York Stock		
1	18	· ·	Btock	Price	Cings	. 188	_	Stock	Pipe	1
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The table shows the closing prices in London and New Yor last week. The share index is based on the prices of the UK of table. Highs and Lows have been adjusted for capital issue



The naed to discover weye of improving the circulation of madical data, especially "know-how", was the main conclusion of Fourth Intarnstional Congress on Medi-cal Librarianship held in Belgrada this month. Attended by over 800 people, it was concerned with DP ea well as medicine and librery

UNDER the heading Health In-formation for a Developing World, the Fourth International Congress on Medical Librarianship attracted over 600 participaots from 56 countries to Belgrade this month.
It was netable for the diversity and quality of the 120 papers pre-sented and fer its Interdisciplinary sature, being dominated as much y informatics as by medicine and

birary science.
Dr. I. Margan, the Yugoslav
Deputy Premier, who is himself a
dottor of medicine, opened the
Congress, together with represeolatives of the World Heaith Orga-Swiss Francs. nistion, Unesco and various related organisations and officials of the Yugoslav health agencies and the city of Belgrade - most of which were also its sponsors. A section en oew technology and computerised databases in-cluded the following papera:

J. C. Blair (US) gave a cemprehensive ruo-dewn on the selection of hardware and consideratieo of software in the medical DP io-

2,200 users

formation aervices. He also gave a financial evaluation of time sharing compared with In-house facilities.

K. G. Kilgour (US) described the Online Computerised Library Network, OCLN, with 3,200 VDUs serving 2,200 users. The metwork uses eight Sigma 9 computers, three medium-sized Tandem computers and 49 Tandem cemputers and 49 minicomputers and diac units with a nominal capacity of 12,000 milion characters.

Three-quarters of the pardeipating institutiona are integrated in the system, and the remaining quarter, which account for only 5 per tent of the whele activity, use rarious dialling procedures. The Health Science Section of the system comprised I68 medical libries on March I.

Hospital

The cost of an iotegrated termi-

Impressive results from Third World by Josip Rajman

cal expert working in Switzerland, spoke oo the role of informatics and a computerised system in a modern hospital. Full details were given of the aystem in the University Hospital in Geneva where two million people are being medically recorded and where full data can be kept oo about 10,000 in-patients. The configuration con-sists of minicomputers and termiences of which a half comprise abnals, and covers a range of in-formation from "face to face" data oo apecific patients to the basic medical achievement records. Cost of installation was about 40 million

Yoablo Amano reported on the trends in databases for medical literature in Japan, where of over 2,000 medical journals, 1,660 are oow covered. After an analysia he summarised I0 conclusions to be followed in the future development of medical databases in

P. S. Gooch (UK) from the Commonwealth Agricultura Bureau Database gave a contribution on environmental and nu-tritional medicine with useful

Poorest

It was normally expected that professionals from developed countries would have more to say about technical achievements. But there were many reports from developing countries, sometimes from even the poorest ones, which described the great efforts that are being made, and even the first impressive results.

Often material from such countries is as valuable as that from industrialised attes, for in developing countries the situations are nure similar and sometimes simply the lack of financial means leads to new intelligent solutions. There were valuable reports from India, Bangladesh, Cam-eroona and Papua New Guinea, on

the activity centring around data processing and the desire to achieve the most up-to-date tech-

The cost of an iotegrated terminal hour is only 50 cents. Seveoty million location listings were attached to 6.25 million records at the medical information. services were designed to cover the R. Medeoica, a Yugoslav medi- whole country in each case.

Twelve Yugoalavian experts circulation of medical information, gave a picture of developments in especially know-how to assist degave a picture of developments in this country, which is now also connected to the largest medical information bases. The Ljubljana developing countries with inter-medical School, connected online to the West German DIMDI-net until the latter are able to satisfy at in Cologoe, has access to 15 further databases (including Med-line) with over 10 million refer-

Lukic of Yugoslavia aubmitted a paper on the role of microfilm in speeding up the re-trieval of medical documentation. Mediar III online (Medline) was

one of the top items in many ways at the Congress. J. Leiter (US) told the audience how it works, based on two IBM 370/168s. Medline was also the main subject et one of the three seminars accompaoying the Congress.

Conclusions at the Cengress resembles in the centred on ways of improving the Organisation.

veloping countries. The developed countries are enchuraged to belp least 80 per cent of demands from their national resources.

in the final discussions many British, American, Canadian, French and German librarians exinstitutions and individual collegea from developing countries, form-ing so-called "twin libraries" (one library from a developed country and one from a developing coun-

Medicsi Informators was established on the last day of the Congress. It la the first association of this kind at a regional level, and

Yugoslavie's Daputy Premior, Dr. I. Margan, giving the opening speach at the Congress in Belgrado.

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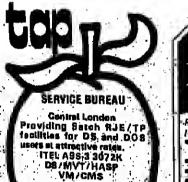
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of the overall user satisfaction eague will not come as touch surend to be loyal to and complimentary about the company, and it gives an overall subjective impres-sion of being among the best of the UK subsidiaries of US companies.

Responses were received by 35 users, 15 with Level 66, 15 with Level 64 and five with H2000s. lisopicst were the Level 66 users, who gave the machine a satisplaca with 2.89. for any model in the survey. All 30 of the 64 and 66 users would recommend the mechine to another customer. The H2000 users rather distort the survey since

i is a defunct machine. in terms of the survey as a whole. use of operation and reliability. Maintenance rates particularly high: 3.2 on the 2000, 3.35 oo Level 66 and 2.95 on Level 64. The GCOS 66 and GCOS 64 operating systems rated very high: 3.5 and 3.2 respectively: A little surprisingly, perhaps, four of the five H2000 users would

recommend the mechine to mother user; it is not quite a museum piece, but would only be found in the used computer lots. Perhapa Honeywell'a biggest

alling is in proposing systems too one-third of Level 66 and more than a quarter of Level 64 users across the company of this - an across the board rating only worse in the case of Burrougha, which is dramatically the most given to this

Delivery

Digital Equipment brought in responses from six DECsystem-10 users, who were the second most would recommend the machine to mother user. One had problems with late delivery of hardware and in with DEC's enhancements dif-

DEC's technical support was also taled poorly: 2.3 on troubleshooting and 2.5 on education. At 2.7, C got one of the lowest retings.

The operating system was lighly regarded at 3.3; compilers and application programs were ICL, equal fourth with Univace average. Ease of programming in the survey, is represented by raied 3.2.

IRM much a 2000. If here 2950s, five h an overall satisfaction

Ming of 2.9, came third in the surey Responses came from 112 there, four with 360s, seven with 3615s, 14 with 125s, eight with 125s, with 145s, 13 with 145s, 13 with 145s, 15 with 145s, 15 with 145s, 16 with 145s, 17 with 145s, 18 with 145s

sample sizes are also unsatisfactorily small: NCR's low rating is an amalgam of the views of 19 users, while OEC's high rating comes from only six. Honaywall comes out the clear winner in the liret UK Datapro survey of user satisfaction, with an overall rating of 3.21 out of 4. At the other and of the

Honeywell top of the poll

acaia, Pating of 3.21 out of 4.21 that the action as the acaia, Petroughs and NCR get a clear thumba down from users, with ratings of 2.77 and 2.75 raspectively. However, while user dissettefaction with Burroughs is clear-cut in the deteiled questioning, NCR's position is anomalous, since the auryay points up no obvious lailings in its performance.

Second in the list is Oloital Equipment, rated 3.00 by Sacond in the list is Digital Equipment, rated 3.00 by the aix UK DECaystam-10 users who responded, but IOM is close behind with 2.89. The only other companias reprasantad, iCL and Univsc, tie for lourth

place with 2.59.

The algorificance of the figures should not be exaggreted: in the US, Amdehl topped the leat Detapropoll on user estimated, but in the UK, no Amdehl or itel sites responded to the questionnaire. Some of the

A striking leature of the aurvey is that whather a

pected. Two 3031 users were also pleasantly surprised at the cost. do better in this category.

Three of the nine 4331 users complained that the software was late and one felt mialed by IBM on how compatible the system would be with existing software.

The 3031 stands out among cur-rent IBM machines as the only one with a rating below 3.0 on ease of operation: users rated this 2.7.

Satisfaction

The 370/148 scores an amazing 4.0 out of four for reliability unique in any category in the aurvey; only NCR comes anywhere near IBM on overall reliability rating, and all the IBM machines rate well above 3 except the 158 which gets 3.0, and the 360a – but that is to be expected.

IBM maintenance rates above average to good, but its technical support was rated average to poor - but then no manufacturer scored highly in this section.

User satisfaction with IBM'a operating systems increases at the top and bottom ends: mld-range stiffed — yet only three of them users, presumably plodding along with VS/1, are least happy. IBM's applications programs reach only a 3.0 rating on the 3032 and 3033 only five users all told - but then

no-one else does any better.

Most users would recommend The DECsystem-10 set the another customer to buy the same to be the same to be the same two 160 sets established in the survey for ease of recommend their machines, which operation, 3.5 out of four, but bad seems a little odd in 1980 — but marks — 2.5 — for reliability.

DEC technical reliability that there are the less enthusiastic, and there ceably less enthusiastic, and there is clearly one 3031 user who is not at all happy.

have 1900s, 16 have 2950s, five have 2956, 14 have 2960s and four have either 2970s or 2980a,

Another difficulty with the survey is that it contains a substential amount of history: five Honeywell 2000 users, four IBM 360 users, eight with ICL System 4 and nine with NCR Centuries are included.

A striking leature of the aurvay is that whather a company gets an oversil good or poor rating, tachnical support is universally marked asvarely. Only two machines rate s 3.0: the ICL 2959 for documentation, and the 16M 370/115 for user aducation. That contrasts with a 2.2 rating for aducation on the 145. Faw people will be surprised that currough a comas an amphetic bottom in this section, as the company has a wide-spread reputation for poor support, and rates low in this section in the UC, too.

78% rating oo response time and dequate: only the 2950 ratea above with ICL users - but there are Level 66 users give a 2.9 for 11% — one user! — found the 3.0 for the current machines and only 20 of them io the survey: 11 touble-shooding — a high rating machine cost less than he extended the peripherala are even worse. All with 90/30s, three with 90/60 or the other vendors bar Burroughs 90/70s, and six with 1100s.

> Sadly, too, although ICL maintenance is well up with the average for responsiveness, it is reted even However, 1CL's technical

support - trouble-shooting, education and documentation - come out near the top of a low-rated section. Overall only Honeywell scores as well in this section.

There are two disgruntled users of 2956s, but otherwise the users of the latest ICL machines are generally happy to recommend them to others, with the 2960, which had some subatantial teething troubles, getting the highest user satisfaction rating - 3.1 - and

The two unhappy 2956 users plan to dump their machines this year for another manufacturer, and of the 35 1900 users planning to upgrade this year, 16 will stay with ICL and 17 will defect. The rest are staying put. ICL's System
4 base looks decidedly shaky; two
will move up to DME/4 or
VME/B, but three are defectiog. One of the 16 2950 users also plans

Univae users rank equal fourth

Support There is a sharp divide in the markets served by these two ranges, and 1100 users are overell

much happier than those with Univac clearly oversold the

90/30: five of the users who responded, 45%, said the company proposed e machine too small for their requirements and three got nasty surprise when they added up the billa. Univac'a maintenance comes out better than anyone apart from NCR, but the company's technical support is way down with the poor average for the sur-

> Disgruntled 90/30 users spoil Univac's average — but ss there are only 11 users of this machine in the survey, the sample is too small to be significant and the six 1100 users are generous with their marking and unanimous that they would tell their friends about it. The only problem which stands out is that two sites found its power consumption and cooling requirements excessive — but they could well be users of the old 1108

or 1110, which are obsolete. It is easy to see why Burroughs

hut half still have the obsolete Cen-rate Burraughs' technical support tury machines, so that the view of NCR's modern machines is based

Puzzling

8500 users in the survey, and the low rating for overall satisfaction is puzzling, since in nu section does NCR rate conspicuously bailty. It rates much better than ICL or Univac on easc of operation and reliability, its maintenance is only just behind Univac and Honeywell, it is a little below averege on technical support, but better in this regard than Univac, and the company's software is overall rated at about the seme as IBM's.

Ooly two Century users are planning to defect to a competitor this year; four will upgrade widt NCR, and the rest plan to stay where they are. The four 8400 users would recommend the machine, and only one of the five 8500 users would not.

So where is NCR falling down?

Undeserved

The survey results strongly sug-gest that the company does not deserve its apparent bottom place in sausfactioo rating.

Burroughs is represented by 37 users, nine with B1700s, three with B2700s, five with B3700s, nine with B1800s, three with B2800a and eight with "other

Unlike NCR's case, it is crystal clear why Burroughs gets its low rating. Almost half of those who responded, 17 users, accuse the company of proposing a system too small for their requirements — and this is as bad among users of the newest machines as the older

The company's technical support figures are sbysmal and look like the marks for a skater

didn'i complete his programme. NCR is represented by 19 users. There are only three users who abuve 2.0, and the lowest mark, 1.3, in the whole survey comes on only nine responses -- scarcely from the five B3700 users for edu-

cation.

Apart from the 15 sets of marks between 1.3 and 1.8 on Burroughs technical support, only one other company gets a mark below 2.11 in this section, and that is NCR with a 1.8 for its documentation on the defunct Century machines. Yet one of the newest Burroughs machines, the B1800, rates 1.6 for irouble shooting, 1.8 for education and a shanicful 1.8 for documenta-

plained of late hardware delivery; three in five Burroughs users from a sample almost twice the size complained of late hardware delivery. The company also beats ICL on lateness of software - particularly on the newest models in

Ambiguous

Surprisingly with a modern machine, one of the B2800 users found power consumption exces-

> Burroughs maintenance is rated about average, and, in line with the company's reputation, when the hardware and software do arrive, they are generally good: hardware gets a rating comparable with that for IBM, while the company scores top marks in the aurvey for its operating systems, com-pilers and applications programs.

Five users only plan to defect this year, but nine of the 37 would not recommend their machines to another user; ICL 1900 users who antbiguous: no-one is going to ins-tall a new 1900, but moving to 2900 under DME is a different question, not covered by the one posed, which is, "Would you recommend system to another

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SW/2

Disappearance of the office as we know it

merchants, had set up permanent dark and dirty little offices. Here the clerks and apprentices, who ransactions of goods that they

What has this to do with auto-. ntelligence of the employee was autocratic and precise, and the respanse servile and uncomplaining, was this much different from much expected of the current microelectrunic proposals? The ensuing innuvations, such as printing, hlotting paper, fountain pens and pencils; and developing practices, bank notes and banking, insurance, hroking, underwriting and so on were part of the expansion of offices. Office jobs were created rather thon lost.

In any case the white collar workers, as they came to be known, had even less pretentions to solidarity and corporate power than their manual colleagues. Even the humblest clerk saw himself 88 sn individual. Whatever the innovation, there was no Luddite re-

Assimilated

So the age of efficient postal services came, the cheap penny post,

years. The telephone and teleprinter introduced instant enmmunication, but in conjunction with the postal service, better often lived in, recorded the transport, wireless and newspapers they siso encouraged the mass, monolithic reaction

The growth of trade unionism in mation? you may say. But in an the offices has been slow compared with that of their factory colwith that of their factory colleagues, but it needs to be reckoned with In fitture.

So we arrive at the last 25 years dominated by the television and the computer. The traditional bal-ance of developments arising graduelly from needs has been upset over the last five years or so. Developments are now seeking marketa and it is impossible to predict whether this will be a permanent trend. Since the manufacturing in-terests behind these are very powerful and the potential gains from sales are immense, effective choice is passing out of the hands of the user, be he the employer or

Apprehensive

Popular demands, engendered by high pressute advertising, are encouraging the use of techniques without adequate appraisal of economic ur social consequences. The influx of cheap computing is already making ioroads into the numbers of accounts and cost files is just as feasible. At present

The practical implications of office eutomation was the subject of the Institute of Data Processing Management/Langton essay competition for 1980. This week we feature extracts from the eecond and third prize-winning esseys. F. BOEUF of Abbots Langley In Hertfordshire, who won £100, foresees the emergence of Luddita trede unions, computer-alded computer fraud and a working populetion of machines. DAVID REED of CAP-CPP, whose prize was £50, describes e world of cottage workers, who leave their homee only to go on

have not and do not wish to acquire the necessary skills. Employers like the idea in principle and there have certainly been great equipment, and inguity ment, what will be the impact in the oext few years?

Telephone linking of conference

saviogs in staff time, but will the ultimate effect be gain or loss? It depends on how broadly this is judged. There are already signs that office workers are beco more coheaive and that office unions and associations are becoming more powerful and more milltant. They will not be able to stop the method being introduced but they can obstruct and if necessary abuse its use.

Fragmentation

Computer fraud for personal gain is now a fairly well-estab-lished crime, albeit aomewhat difparcels delivered to all parts of the clerks, and moy affect accounthe overall effects are marginal, The typewriters, ladies who could type, arrived not without some male chauvinist reaction, but a trade recession, other traditionally more backward countries doing their own thing apprehensive and many employees but with a trade recession, other

rooms now allows meetings to be grouped at two places rather than one. This has so far not had any appreciable effect on office workers, but with closed circuit television one can expect to see the

This trend can be expected to accelerate, given the high cost of office space and the cost and difficulty of commuter travel. Lightweight "paging" equipment allows the office worker, in common with everyone else, the freedom to move around while still retaining communicability provided that there is always a convenient tele-phone available. Now that restrictions on local broadcasting are belog loosened, if not entirely removed, this must mean more use of totally portable, coat-pocket

Hand-held terminals allow the

Devolution must come

users would be aightseers and holihe previously did in his office. The savings made io his time and cost of not travelling to work may well envisaged; this would of course of petroleum products could be envisaged; this would of course mean the car industry constructing only freight carriers, from the 40-ton articulated vehicle down to the "mini-truck". Private cars, being-used almost exclusively for holi-days, would probably become a rental item only

The post office mail service for branch systems would remain. It follows that the concept of the

keying in and storage of "on-site" data, ready for telephone transmission to the computer. These will further extend the "walls" of the There are two possibilities

become something of a battlefield between conflicting interests, with

see a primary, cootrolling computer, aited to suit preatige or defence considerations with satellite would expect security problem to be more easily solved as computer increases, Q in the or in single person sub-onices.

There is no reason why the subhourly, daily or as is oeeded, by private firms.

Mobile offices

clude, as well as data and speech transmission, closed circuit TV.

offices or in more limited circumfor the human walking

become ao occupational disease, or an occupation itself depending on how you look at it.

[But] given the manis for collec-ting information that will usdaubtedly arise, how da you print that this or that set of it has been pirated or misused?

Bither malfeasance is made imposible, ie the computer system is unbreakable, or the wrong-dong is monitored and detected. In but cases the same computer could undertake security and in larger systems a dedicated machine could be used. On the and hand, on other there is a possibility of equally intelligent computers is ing used to break into the system.
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It is certain that more and more

data is going to be collected and communicated. In theory the growing army of unemployed could be re-employed collecting it or assimilating it. In practice there will be re-employed collecting it or assimilating it. will be more and more automax collection of data, and there is is reason why there should not be automatic assimilation and m Ecreasing amount of intelligen process control.

New language

an International machine language progress" ahead before happen. There will certain be years of labour resistance whith will delay but not stop the process.

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closely tied in with its livelihood.

Newcastle is still trying to lagain ite leedership by else would have built a railway alniost through the middle of a castle built in 1080? proved by projects like the

To eelebrate its 900th birthday, Newcastle is, as ever, looking forward rather than back with an exhibition of energy and engiocering in the Eighues at the university campus. It was called Newcastle

There is evidently no shortage of lively minds and creative skills.

Encouraged by the couocid, new
enterprises are springing up which
draw on Newcastle'a traditional skills such as heavy engineering and mining to combine them with the new technology.

British Gas has several estab-lishments in the North East, in-cluding the Engineering Research Station in Killingworth.

we are constantly seeking new ways of tying in microprocessor technology with existing engineering skills," said Colin Duncan of British Gas's External Services.

Micro-engineering is being the Newscort and the neeting Department took part in the Newcastle 900 exhibition.

The department had aeveral applications on diaplay at the exhibi-

The systems feed essential maio of word processing - Dr Julian neers so that they can effectively govern such factors as gas pressure from one central point.

Success

Other successful projects in-clude the On Line Inspection Centre at Cramlington, which uses microelectronics to inspect 10,000 miles of high-pressure gas pipe

Plenty of home-grown software products

THE North East has largely bean inoted by the big national software house but there were plenty by localo with homanic series of the local with homanic series of the local small software software again to provide computer expertiae to the longer established concerns, heavy anisheering, pharmaceuticals the longer micels and brewerles.

They included Real Time, which has produced to with bishess expected the longer will be a south shields firm and between the light and of putting money into ambitious, projects. The city has already proved that it is not frightened of putting money into ambitious, projects. Since it list within a Special Development Area it can offer find the wind being the money into ambitious, projects. Since it list within a Special Development Area it can offer find the own business system; and on the fact that the not frightened of putting there.

Nawdaste-upon Tyre has terminated the tradition despite hard in the real local firms are likely to move it were the lightwart of the not provide and the lightwart for the first projects.

Helping local firms to adapt to

mic commercial co-operation. The Micro-electronic Applications Research Institute is an mousual alli-auce of the city's Polytechnic, the university and one of the UK's largest software houses, CAP-

> ton display at Newcastle 900.
> MARI had examples of how it tries to help bosinesses adapt to micro-

Tyne and Wear County Council.

Marvin, a system developed for client to monitor hazards in iffices and factories, uses nn Apple II. The Apple uses sensors placed around the premises, and if there is a failure of any sort will give an carly warning. A screen diagram indicates the safest escape route from the building in case of fire, or invisible hazards like radiation or oaistatous guses.

live role in passing on state-of-the-MARI is also involved in teachart camputer expertise. It has deing engineers and business people how micros can assist them. One veloped its awn extensive system uf mints and micros as well as usproject an show, developed with a ing the computing laboratory's IBM 370. lucal firm, was used hy a local

micro technology IN Newcastle's Jesmond Road school to monitor results of there is another example of acade-laboratory experiments.

The RT80 laboratory system was designed and built for use in teaching and research. The user CPP, with extensive funding from that immediate access through a front panel so that data lines can be

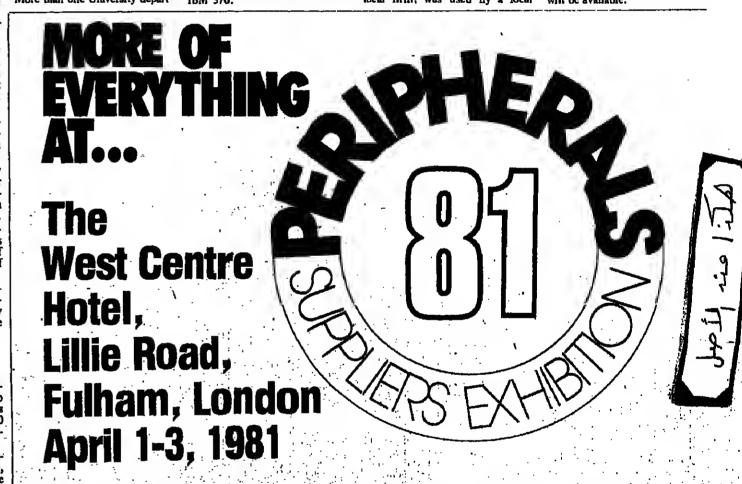
> MARI is also involved in process courrol, automated testing of components and a whole range of industrial applications for microelectronics, including a ro botic praject with a small engi

neering company.

About 80 per cent of MARI's projects are with local companies. large and small.

On the move

A TRAINING centre for users of online information retrieval services is to be opened in London this month by the magazine Online Review Terminals, and visual aids



SO SUCCESSFUL was the 1980 Peripherals Suppliers' Exhibition, that the organisers have had to make it bigger in every way for 1981.

MORE TIME — An extra day, three Instead of two. Attendance in 1980 was treble that of the previous year and in the opinion of the exhibitors the RIGHT people attended

MORE SPACE Half as large again to accommodate all the companies that

want to exhibit - already over 60 per cent of the 1980 exhibitors have re-booked.

AGAIN --- Peripherals will bring together suppliers and buyers of technically sophisticated computer equipment in the relaxed atmosphere of a first-class hotel_ exhibition suite.

AGAIN — Peripherals is presented by the Peripherals Suppliers' Association and sponsored by "Systems International" the prominent monthly computer journal of IPC Business Press, the world's largest complex of specialist and business journals.

IF YOU WOULD LIKE MORE DETAILS - FILL IN AND RETURN THE FORM BELOW

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Company Address: .. Tel No.:

but it has needed this century to

The contrast between the number turn the office into o way ut life for justallation and the seventh month

desire of people to communicate progression as from the to a new job since the location of disappear, and many documents impedes the intended processes defying integration with paper, his place of work, which of course until copies were printed or the Nothing new systems.

Nothing new to Someone Else, All useful possible. A worker can easily move original document would also disappear, and many documents his firm is totally irrelevant to would exist only in mass storage watch and data processing, remains constant.

Nothing new to Someone Else, All useful possible. A worker can easily move original document would also processes. As to setting the this fall to be constant.

the inneteenth or the confield to ago, was an instant success and has carried times; the place that many people go to most weeks. Not that the office is a novelty— histices and some quarters only as en example increments had them long before the moneychangers' headquarters were Lobbed from the Temple— luttit has needed this centure to

nuitilians ... say in the selection in the selection in the selection in the selection, but the selection is selected, but the selection is selected. Trying Bad Respondents and above all, Transfert Incoming Calls designed to communicate, and the design of neonle to communicate to the selection.

Nothing new.

While he designate and date process in such that the designation with paper and date process in such that the latest process in such that the la

THE office has been to the tweo-tieth century what the mill was to copier which arrived some 20 years and a printing device, he can carry maioly freight, but the secondary

suffice to compensate him for tworking at home, leaving the saving in office provision to help fund the equipment needed to support him in his new location.

Apart from the domestle and carrying letters would disappear cisure advantages and the ebility completely and only the services for people to schedule their own tequired to carry parcels not always and only the services ready ready covered by mini-truck lessure advantages and the ebility for people to schedule their own work ninch more than hitherto, There are greater advantages with staff mobility than are currently

office when they are sufficiently developed to be used for general The office of the future may well

the word "office" either disappearing or changing to a less precise, noo-locatioal meaning. At the core ooe might expect to microcomputer terminals in homes

offices should be more than modest sized cubicles provided on the same basis as telephone boxes by Post Office or hired out

Data input options will be various; speech, keyiog in, or RAM. The transmission could in-

Since weight and wires are an impediment to portability, the first will be reduced to a minimum, the second dispensed with altogether, using one or other of the various carrier wave possibilities. This will allow vehicles to act as travelling ,

On the reverse side, some of the suited to machine intelligence? employees will be attempting and probably attaining various kinds and degrees of frauds, secure in the knowledge that the powerful white collar unions to which by this time all "office" workers willbeloog, will certainly provide strong support. Cheating the computer is so impersonal that it could

would seem that, baving removed the present concept of the affice z, a physically located and confind entity and replaced it with some thing more tenuous and universe It is probable that many if not all a its "workers" will be machines and not people. There are some year of "progress" ahead before that

Is there scope for a new concept,

on which illustrated process control, computer aided design tenance information back to engi-Morris' students use the latter to produce their thesis!

It has also developed its own

the ebova view is not an-

tirely wrong, it misses

Newcastle is a city addicted to "firets" - its

elegent Georgian streets

were the first to be lit by

electricity, thanks to Swan.

In the last century. Siepheneon, Armetrong

and Palmer were among

the local lads and this

helped to maka Geordie

land one of the UK'a

strongest Industrial areas. One hundred yeers later,

welcoming new technology

with open arms. This la

Bykar Wall housing da-

valopment which la heeted

by a waste reclemetion

plant, and the local electric

railway service, the Metro,

which not only brought

work to the area but also

re-opened to passengers

lines closed by Dr Beeching.

Varsity's

bid to

spread

out quite a lot.

database on chemical properties, based on a Gromemco System III. Other projects such as the microcontrolled monitoring of acid in the output of effluent into rivers have woo the interest of industry.

Using a Digital Equipment

PDP-11 also used for graphics

and Zilog's Z80-based MCZ-1,

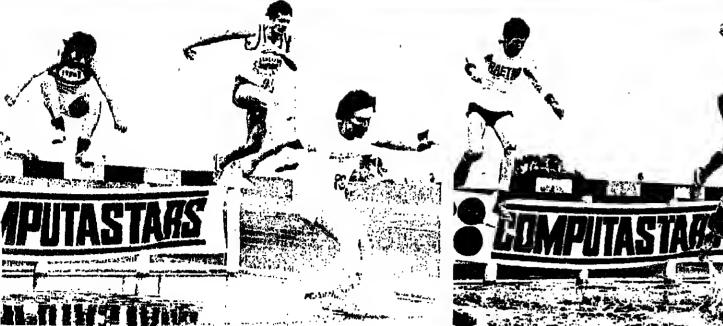
the department bas developed a On a smaller scale, there are developments such as the Gascopact,

The system uses a self-tuning a hand-held device about the size of a hriefcase which is about to don'column to respond to accurate to the size of a hriefcase which is about to ation column to respond to covi- undergo field trials. In its triangutonmental changes. The project lar bottom balf three sensors give was started six years ago and was an accurate detection of unthe result of several PbD theses, It derground pipes - a development has been tested in Canada and the which would be highly saleable

department is hoping for a first eleaewhere.

String Gas is proud of its restationer, probably a local chemical firm, diness to take up microprocessor

AND IF YOU THOUGHT THAT WE HAD FORGOTTEN TO RUN THE STEEPLECHASE, YOU ARE IN FOR A DISAPPOINTMENT!







It's so tight as Viv strikes gold

THE finels of Computestars slarted off with a series of bangs on Saturday at the New Alexander Stadium, Perry Bar, Birmingham. The surprise event was pistol shooting - just the thing for angovers. Organiser Gordon Cairns said:

"They're colling me the JR of Computators. No one expected it it was a bolt from the blue." This event also threw up one or two surprises: the winner of the men's events in this section was Pict Wolraven of Swets en Zeitinger from Holland, who said be

While there was plenty of competitive spirit from competitors such as Geoff Linnell of Data Logic and Martin Rigby of Rowntree Mackintosh, in the men's individual capacitations of the competitions.

through to take the gold.

The ladies had the closest competition though, First place honours were shared by Bridget Cuthill (Legal & General) and Lucy Balnes (United Biscuite) with 79 points each. Despite the ect that they were neck and neck st of the day, there was alwaya

> codo version. * ASCII - NG code version.

Mioroprogessor gonirolled Modem or pultent loop intarface.

For quote and further details.



other girls in the top 12 placings.
Third place went to Anne Shafto of Rowntree Mackintosh who has featured in the honours in previous

In the men's individual events, no less than three competitors tied Logic and Martin Rigby of Rowntree Mackintosh, in the men's individual events it was Viv Oliver of
Safe Computing who eame

Second Pier Walraven (Sweis en Zeit-

Up until the last event Viv Oliver of Safe Computing was just in the lead by one point. Then team captains started to look at the same hand and realised that they scoreboard and realised that they could share the honours if some thing a bit extra could be pulled out of the hat.

Numerical

or Baudot 5 unit

ode conversion with the

Paper Tape Reader Punch Terminal

Bourne End (06285) 24977 or telex 849408 Trend G. Trend Communications Limited Ventage Knaves Beech Estate: Loudwater, High Wycomba: Bucks HP10-902.

Control

have regretted not getting more points earlier on in the day. So it was left to the steeplechase

always a crowd-puller - to sort out the men from the boys, so to

As Father Time was advancing, the organisers decided to teduce the distance to one lap of 400 metres - but this did not stop the usual number of competitors taking an early bath.
All this did not deter Viv Oliver

from giving his best. As most of the competitors were down for this event, no one knew who would be

the overall winner — it was just a case of going as fast as one could.

Viv also scooped the Computastars Tankard for being the top international aportsman at the finals.

There was also plenty of action in the gym events. Despite it being a test of muscular endurance, com-There was also plenty of action in the gym events. Despite it being a test of muscular endurance, competitora were in fine vocal form as

Mick Jones, 24, a systems analyst with Data Logic et Manchester, said: "It was awful. We drew lots for this (event) and I lost," He did manage 15 push-ups though.

INDIVIDUAL RESULTS

Best lady: Bridget Cuthill (Legal & General) jointly, with Lucy Baines (United Biscuits) both with 79 points; 3, Anne Shafto (Rowntree Mackintosh) 75, and 4 oeh),75; and 4, Louise Cotter (Segus),

Gale Computing) 75 Table 2 Geoff Librard (Data Table) of the with Dave Cross (National Provident) and Plet Weirsvert (Swets Zeitlinger), all with 731 and 51 ms Rills (Midland Household Stores



e tie for first plece in the UK Ledies individuel events. Computer Weekly editor Simon rimm presents
medels to (from
right) Bridget
Cuthill of Legal &
General, Lucy
Balnes of United
Biscuits and Anne ridget end Luny

will shere the Computer Weekly Rose Bowl for elx months each. Simon elso pre-sented medels for UK men'e events

Brouwer of Digital Equipment

BELOW - In the ohange overs.
Hare Rowntrae
Mackintosh's Mart In R I g b y
overtekas ARC'e





Piet shoots his way

FOR the first time Computates went international with a street Dutch contingent — with the litelibood of further countries tear-ing next year. ing next year.

There were separate awards for the Dutch teams, who were no eligible for the international

Over 170 competitors and the supporters flew over from Holand on Friday evening to take paid cheer. The Continental costings gave the finals a flavour of it's Knock-out with the whistle, horns and cispping.

Despite leaving a continent it is the paid to the final of the paid to the p

their hotel, the Doich were smeather the keenest sportsmen and worst there. At 9:30 most of them were seen warming up and training we the event with the enthusiam but the event with the enthusiam but the state of the same brought a test to would have brought a tear to a sergeant-major's eye. Yet the star of the Dutch conti-

Yet the star of the Dutch coar-gent must be Piet Walrayen a Swets en Zeitlinger who ted a second place overall with Gen Linnell of Dats Logic and Day Cross of National Provident. His efforts were a great help a

his team and undoubtedly coairiuted to the Swets team coming at No. 8. A natural athlete, Piet was mot

A natural athlete, Piet we more control of the cont

highest placed Dutch of State Wilms v. Muntfoot of Creek & Wilms v. Muntfo

place overall.

Adi Covojec, publishe i i i Dutch weekly magazine Combined ble, invited the compension of the Holland for next years from DUTCH AWARDS

Best ledividual lady: Cardi Rat van Tonningen (Control Dail) points; 2, Wilms v Mostfoot (Cardi Rat points; 2, Wilms v Mostfoot (Cardi Rat points; 2, Wilms v Mostfoot (Cardi Rat Petrol Ra



"WE didn't realise until the start of the steeplechase that we had a the steeplecbase that we had e chance;" was the remark of Glyn Hekkili; stapiain of Midland Household Stotes; just after he received the Men's team trophy at the linal of Computastars on Saturbase of Computastars on Saturbase Men's team with 202

Not only were his learn internstional winners, getting their tro-ply from Mrs Maureen Cairna, out they also won the George Wight Trophy for the best UK

Glyn's team amassed 213 points in competition where the compe-tion set their own standards. This year the final was run on Decath-in lines. on lines, with all teams entering il the events and the top member of each team entering the indl-

Organiser Gordon. Calrus said
the standards were higher than
the contesting the last point.
This Rownitree Mackintosh, who
his Rownitree Mackintosh, who
his for the best combined ladies
and than a learn, were third.
The events were instell should be

and tiam's team, were third.

The events were pistol shopting, a veint 400 metres hurdles relay, by socret dribbling, hockey dribbling, short prints and the despite Data Logic hald from the first three events, which is the list three events, which is the girst three times and from the other from the steeplechase.

At any time Rowntree Mackin-tosh, United Biscults or Essams

Computing's Men's team with 202

RESULTS

Best UK Ladies' team — Legal & General 224 points; 2, Rowntree Mackintosh 200; 3. United Biscuits 200; and Joint 4. Basams and Thorn RMI (Hayes) 192.

Rest UK Men'a team — Midland Household Stores 213 points; 2. Data Logio 209; 3. Rowntree Mackintosh 204; and 4. Safe Computing 202.

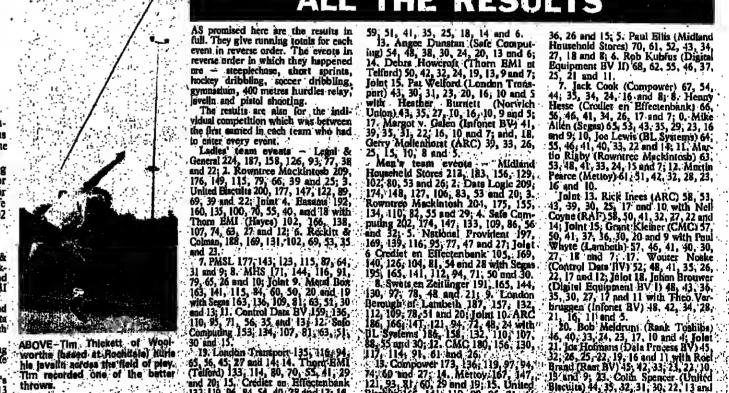
Rest Bureau — Safa Computing (Men) 202; 2, ARC 186; and, 3, Safe Computing (Ladies) 153.

(Men) 202; 2, ARC 185; and, 3, Sue Computing (Ladies) 153.

Best combined Ladies' and Men's team: — Rowntree Mackintush 413 points; 2. Midland Household Stores 384; and, 3, United Biscuits 366.

Best international Ladies' team Legal & General 224 points; 2, Rowntree Mackintosh 209; and, United Biscuits 200.

Best international Men's team Midland Household Stores 213 points; 2, Data Logio 209, and, 3, Rowntree Mackintosh 204.



BELOW Among the many honours up for gratis was the Unicov Trophy for the best placed bursel, teem, mais or lamale, it was presented by Gillan Events Gorget of Peterborough Data Processing to Safe Computing Instured has low).



LEFT - Short eprinting le not as seey as it looks. Hare, the individual Ladies avent ahowe, from left, Debrs Howcroft (Thom EMI at Tellord), Bridget Cuthill (Legel end Genaral), Wilme v. Montfoort (Credist en Effactanbenki, Jecqui Reed (Metal Box), Anne Herriman (MHS) and Anges Duneten (Selel battis it out.

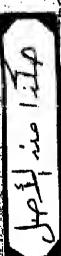
RIGHT — The children were not forgotten ea Safe Computing soneored en ert competition for the kids which wes organised into Under 10 end Over 10

Ken Jackson, general mensgar of Bafe. Over 10 winner was Tracey Lewie (13) whose lether Joe is a technical enelyst with Bi. Systems at Redditch. Under 10 winner was Tim Elkin (7½)



ALL THE RESULTS

19. London Transport 135, 146, 94, 65, 56, 56, 52, 7 and 14, 14. Thord EMI (Telford) 133, 114, 80, 70, 55, 41, 29 and 20, 15. Credier en Effectenbank 132, 119, 96, 84, 54, 40, 28 and 12, 16. Infunet 130, 120, 120, 98, 68, 52, 34 and 20, 17. Norwich Union 121, 102, 80, 63, 54, 40, 37 and 21; and 18. ARC 118, 105, 84, 69, 39, 24, 18 and 0. Ladies inclividual, events: Joint Eridget Cuthill (Legal & Goueral) 79, 67, 56, 44, 33, 26, 13 and 3 with Lucy Baints (United Blaculta) 79, 65, 54, 33, 26, 16 and 12, 3. Anne Shaito (Rowntoer Mackintonia) 75, 63, 52, 39, 27, 21, 12 and 6; 4. Louise Couter (Segas) 72, 60, 49, 56, 30, 24, 17 and 6; S. Elaine Peiryman (Basama) 74, 59, 55, 49, 26, 16, 16, 16, and 5; 6. Anne Harrimant (Midland Homeshold Stores) 65, 83, 43, 39, 31, 25, 12 and 8, 15, 47, 12, 47, 11 and 7, 10 and 5, with Glyans Futherin (Reckitt & Colman) 63, 54, 56, 30, 51, 21, 11 and 7, 10 and 3, with Glyans Futherin (Reckitt & Colman) 63, 54, 56, 36, 28, 23, 16, and 4, with See Fictivelia (Littorn BMI) at 11, squares (Metal Rox) 60, 50, 40, 48, 45, 45, 45, 34, 23, 10, 7 and 1, 11, squares (Metal Rox) 60, 50, 40, 58, 22, 45, 8, 8, 8, 8, 12, Wilms with the color of the color o



PRODUCT NEWS INTERNATIONAL

Electronic clocking-in based on Intel 8085s

msnagement reports on each day's attendance, hours worked and overtime can be schieved with Plantime's Plantime-Four system. Based on Intel 8085 chips built into terminals, workers clock in and out using a personal nylon key. While the key is

inserted, the worker's works number, hours worked so far, and overtime accrued sppesr on a 32-character, liquid crystal displsy. This enables inly the worker to see the in-

terminals in the works. The system can be pre-programmed to operate eight different weekly or fortnightly working timetables, each consisting of any permutation of eight different types of working day or shift. These include shift work, day work, part-timers, flex-ible hours and stall hours.

All terminals are connected to a conununications and monitoring centre, although smaller systema may use them on a standalone basis. All terminals have their own

Tel: 01-837 3636

The centre's uwn memory is a minimum of 8K with computercompatible output on floppy disc. Terminals communicate with the processor and with each other via repeater units so that any terminal may be removed without in-On a basic system, up to 2,000 terrupting the data path. Up to workers can use any of up in 32 eight terminals can be oo each of the four knops. Communications speed is 9,600 baud on 20 milliamp

matic printouts which include de-tails of attendance, clocking in and clocking out times onalysed according to department and working group within that depart-

lendonce indicator which shows lights beside people's names once they have checked in.
Weekly nr monthly reports can also be printed as well as an indiOur picture shows Plantima's intal 8085 besad ra-placament for paele ayetem up to use up to 32 tarmi-



payroll program from the floppy

Exhibition & Conference

Now in its fourth year. Microsystems

March 11-13, 1981

buyers and users of

surroundings of the

Centre

Wembley Conference

provides an annual forum for

microelectronic products to

meet and do business in the

comfortable and spacious

at the Wembley Conference Centre

IPC Electrical Electronic Press present

MOROSYSIEMS

worker if required. Attendance Dual role work station

FROM forms handling maoufacturer Wilkes-Multimatic comes a work station designed to double as a terminal table. It has a raised back edge to Plantime Ltd (CW), Shakespeare Industrial Estate, Shakespeare Street, Watford, WD2

SHD. Tel: Watford (92) 44300.

SHD. Tel: Watford (92) 44300.

foot reat. The work station can be arranged to suit left- or right-handed workers.

There is also a shelf sited below the working surface for papers, files or the operator's personal be-

can be sited back to back or side to side. Full length modesty panels sre also fitted.

Wilkes-Multimatic Ltd (CW), Parkfield Road, Wolverbampton, WV4 6EL. Tel: 0902 49434.

16 channel analogue signal multiplexer

A SIXTERN channel analogue signal multiplexer, Model 3420, which is said to have a low series resistance of 0.5 ohms and interchancel isolation of over 10° ohms is available from Farnell International Internation

resistance of 0.5 ohms and intercbanoel Isolation of over 10° ohms
is available from Farnell International.

Made by Data Precision, It can
be used with any data acquisition
system and is compatible with
equipment having a computer interface such sa the 4½ and 5½ digit
Data Precision 3400, 3500 and
7500.

Model 3420 is said by Data Precision to provide up to 16 two-wire data channels or eight four-wire channels in addition to having s guard connection.

The unit allows selectable dwell times of 0.1 to 10 seconds and has four operating modes. Operator-selectable, the unit will automatically scan the channels, and the channels are the channels.

has four operating modes.
Operator-selectable, the unit will
automatically scan the channels,
and the channel can be selected
sequentially or randomly by external programming. Data Recording Project Group, 3M United Riagdon Lt. (CW), PO Box 1, Section RG12 IJU. Tel: 934, 5849.

Industrial

controller

GEC SEMICONDUCTORS in troduces an industrial digital controller designed to operate at slave to the Intel ISBC 941 microcomputer. GEC says the identification of this device is to proceed the control of the control of

behind this device is to pross most digital inputousput signal thus freeling the master micro from routine tasks.

The firm suggests typical applications of switch sensing, money speed control, stepper motor application and serial communic

The controller is said to be the

sense a change of state, cons

and generate pulses as well a me-

suring time periods and frequencies. There are nine preparamed primary functions whit may be requested by the many miero. Each primary function in a specific input/output task.

Commands can be split into two categories: control and split.

categories: control and obliny.

to start and stop a primary func-tion. Utility commands are

typically associated with moving

data or resding status. Any of the 16 I/O lines not used by a primary

function are avallable for general

purpose I/O through the use of

The device is boused in a DP

package and requires a single live

volt DC power supply.

GEC Serolconductors Lie

(CW), East Lace, Wember HA9 7PP, Tel: 01-904 9303.

utility commands.

digital

BOOK REVIEWS

How do you measure

How to assess your managerial style, by Professor Charles Mar-gerison. 132 pp. £10.95. MCB Publications, 198-200 Keighley Read, Brad ford, BD9 4JQ. Tel:

UNTIL recently, DP management has typically been isolated from the main stream of company mangement. DPMs tend to be re-

nelogy than management.
The responsibilities of DPMa embrace or overlap most, if nut all, areas of management, including production, stock control per-sonel, administration, O & M, finance, R & D, planning and

forecasting.
Now with the movement wards DP iotegration, whether by distributed processing, the introduction of the mighty micro or the thrust of the electronic office, the DP team probably feel themselves being remorselessly drawn into the company.

Ambition

The publication of this book is opportune, The author believes that, by taking a challenging look n your own managerial style, strengths and weaknesses cao be revealed, checked and, where

recessive, improved.

The volume is structured on a basic premise of leadership, oppor-maky, motivation and ambition. his very much a "do-it-yourself" syle of book with ample exercises, ices and questionnairea,

Although at times a knowledge of Logs and advanced algebra rould help the resder in evaluating the results, the book remains a ractical and stimulating study.

Stress

the style and presentation of tadet's understanding and intest inderstanding and in-test if only the average compu-ter manual was one half as attrac-ively produced, there could well be a nuiceable improvement in intillation efficiency and pro-ductivity.

Irrespective of future technical dereispinents, Chapter 8, "Do yeu work under pressure" can be recommended to DP management. An impressive score is guaranteed in respect of the stress and strain of pressure chartes. messure charts.

on networking

Extensive

There is then a ahort chapter on

data security, data encrypting, and

message and user authentication.

The final chapter, un network optimisation, includes discussions

f network reliability and availabil-

city and flow. There is a glossary and a general index, and cach

The presentation is clear aml

mustly non-mathematical and suit-

able for those with a general back-

for those concerned with the

practical design and operation of

computer networks and also for

network designers; as such, it is

However, it gives only brief discussions of theoretical and

simulation methods for investigat-

ing networks and it does not con-

sider the techniques and problems

of network perfurmance mea-

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ALAN MAYNE

omputer networks and their protocola, by D. W. Davies, D. L. A. Barber, W. L. Price and important protocols, which are the strictly defined procedures for in-C. M. Solomonides. 487pp. £17.50. John Wiley & Snns Ltd (CW), Baffins Lane, Chicheater, teraction across an interface and communication across a network.

THIS book is a sequel to Communications - Networks for Computers, published by Wiley in 1973, The protocols covered here in-clude HDLC, X25, transport serwritten by the first two authors vice, other higher level protocols, and terminal handling protocols (X3, X28, X29, and virtual termi-nal prutocols). The authurs also named above and was concerned with the technology created by the convergence of DP and telecomnunications and the emergence of systema that combine them to prodescribe briefly their views un uni-

The two books complement each other so that, together, they form one of the best and most comprehensive surveys of compunctworks yet available.

After an introductory chapter, there are chapters on packet switching, routeing, flow control and congestion avoidance as well as on packet broadcasting systems, including packet radio and satellite

The next three chapters giv

Thought provoking

Systema Analysis, by Andrew Parkin. 220pp. £6,95. Edward Arnold (Publishers) Ltd (CW), 41 Bedford Square, London, WCIB 3DQ. Tel: 01-637 7161.

THIS typed volume covers the normal material for aystems analysis and design in so interest-ing and thought-provoking man-ner, and tends to be oriented towards database systems.

It contsins a large number questions and snswers as well as a case study. The book attempts to avoid the nae of jargon and buzz-

Throughout, the author has tried to draw attention to practical and he also deals with the security

role of this work. It is well worth reading by students and all involved in data processing, but beginners may find that some parts of it need expansion and explana tion by a lecturer of a text on

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The incthodology proposed is applied in a top down, danahase oriented, system design.

The analytical role is separated from the design role, but the emphasis is on the latter, and the roblems of ensuring that the anayst identifies and specifies all the relevant facts, in the first place, are unt developed in the same detail as

Concept

The structured concepts put forward are well worth consideration

Structured Systems Analysis:
Tools and Techniques, hy
Chris Gane and Trish Sarson.

Limbortonately the authors de Can approach in this book. Unfortunately the authors do not appear to consider documentation standards such as those of the National Computing Centre, which may have helped them to avoid the use of a lot of new symbols. The preference shown for decision trees over decision

tables may also be personal to the

Clearly, documentation i shown as an integral part of, and as an aid to, design work and if the myth that "documentation is killed off, then the book will have

served a very useful purpose.

The authors' case may be overstated by comparing good structured design with some not so good "direct" design, hut they present a good idea enthusiasu

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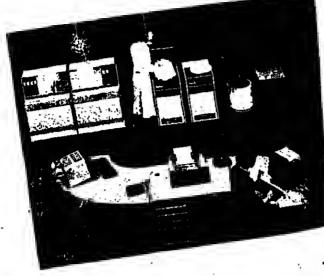
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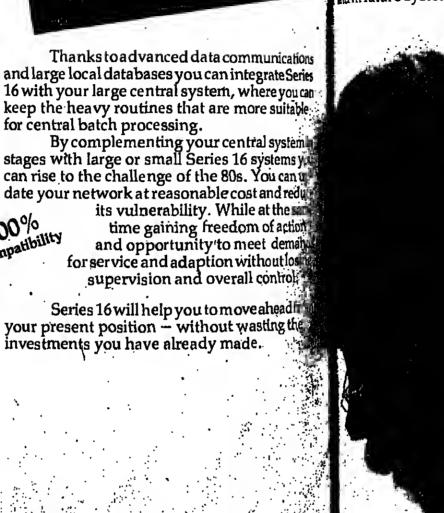
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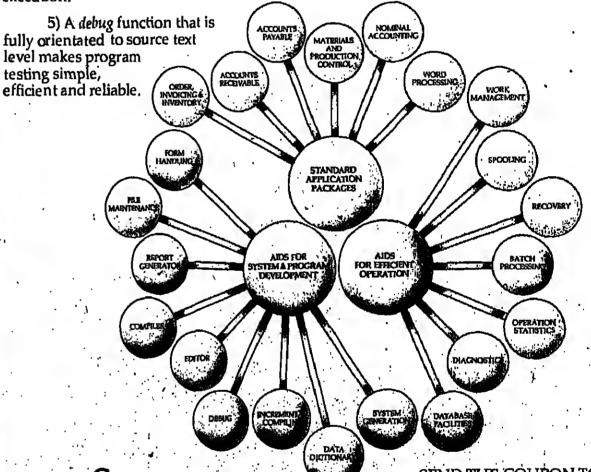
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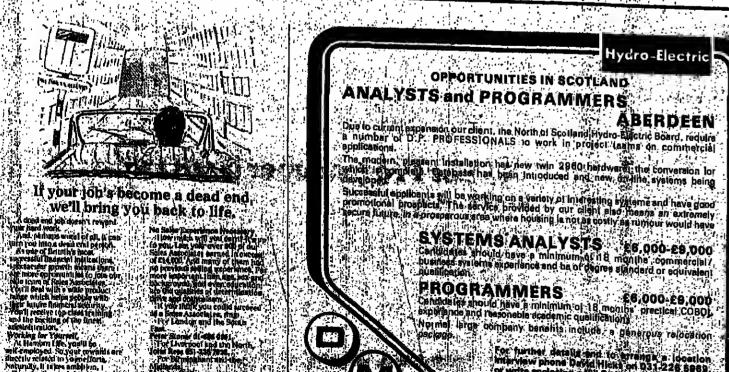
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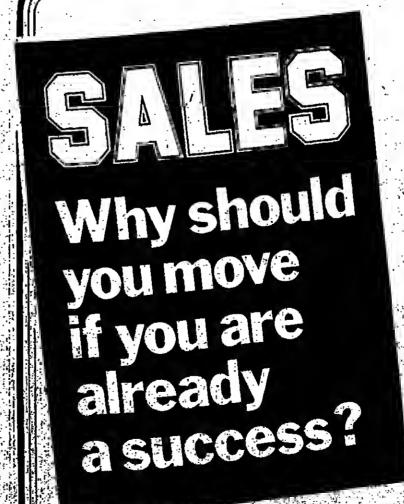
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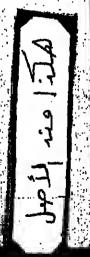
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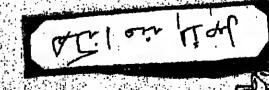
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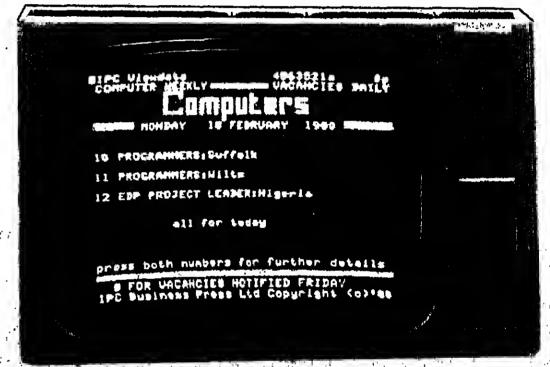
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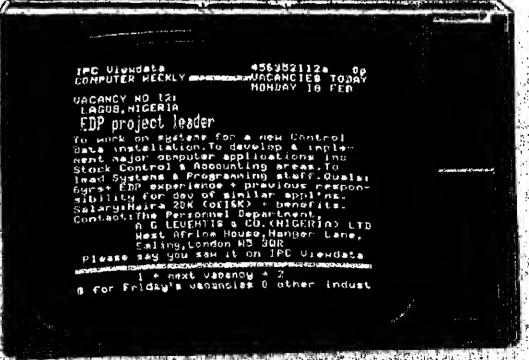
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A B.Sc. degree or equivalent, ideally with computer science as one of the major subjects, will be a recommendation, although

applicants et all levels of qualification will be considered whether they have previous eyeteme programming experience or not. Complete in-service training is provided and etail members are encouraged to develop their expertise in eppropriate areas of computing eyetems technology through the ettendance of courses, symposia and the like. Working conditions are amenable to turther study, and researchera are offered both

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(DR/1962) 4+ years (seniors)	8000	8	
PROGRAMMERS			
(DR/1963) 2+ years COBOL	8250	8	
(DR/1964) 3+ years COBOL		6	
(DR/1965) 4+ yrs (seniors) COBOL	7250	4	
Contact Sugan Stuart			

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Birmingham

A	VALYSTS	£,	No. of
(DR	#1966) 2 + years commarcial	6600	3
(DR	(1967) 4 + years (senio1a)	7750	2
	ROGRAMMERS		
(DR	1968) 18 + months COBOL	5750	2
(DB	196912 + vaars COBOL	6500	6
(DR	(1970) 4 + yrs (seniors) COBOL	7800	6
Cor	nlact Susan Stuart		

Leicestershire

ANALYSTS	2	No of
(DR/1971) 18+ mits commercial	8500	2
(DR/1972) 2 + yrs (inancial	8500	2
(DR/1973) 2+ yrs manufacturing	7000	2
PROGRAMMERS		
(DR/1974) 18 + months COBOL	6250	2
DR/1975) 2 + yeara COBOL		
(DR/1978) 3+ yeers COBOL	7000	2
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Nottinghamshire

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ANALYSTS	٤,	No. of
(DR/1977) 2 + years financial IBM.	8750	3
(DR/1978) 3 + years commercial	7200	3
(DR/1979) 4 + years (seniors)	7750	4
PROGRAMMERS .		
(DR/1980) 2+ years COBOL	8500	3
IDR/1981) 3 + vears COBOL	7000	. 4
IDR 1982) 4 + yrs (seniors)	7500	4

ANALYSTS	£	Military Marie
(DR/1983) 2 + years commercial	6500	2
IDR/1984) 4 + years (serirors)	6000	2
PROGRAMMERS		
IDR/1985) 2 + years PL/1	6500	2
(DR/1986) 2 + voars COROL	8500	2
(DR/1987) 4 + yrs (seniors) COBOL	7500	5
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(DR/1989) 2 + yrs menulacturing 7000	5
(DR/1890) 3+ years finencial 7500	4
(DR/1991) 4 + years (seniors) 6000	2
PROGRAMMERS	
(DR/1992) 12 + months COBOL 5500	4
(DR/1993) 2 + years COBOL 6500	5
(DR/1994) 3 + years COBOL 7000	4
DR/1995) 4 + yrs seniors COBOL 7500	3
Contact Oathy Scott	-

Merseyside

inc. ocyonac	
ANALYSTS £	No of
(DR/1996) 12+ mths commercial . 6000	5
(DR/1997) 2 + years production 8700	
(DR/1998) 3 + years linancial 7200	
1DR/1999) 4 + years (sanlors) 6250	
PROGRAMMERS	
IDR/2000) 18 + monthe COBOL 6500	6
(DR/2001) 18 months IBM	
ASSEMBLER 7000	3
IDR/200213+ years COBOL 7250	8
(DR/2003) 4 + yrs (saniors) COBOL 7800	4
Contact Cathy Scott	

Lancashire		
ANALYSTS	£ "	No of cancies
(DR/2004) 12+ miha commercial. :	6000	2
(DR/2005) 18 + months financial		2
(DR/2006) 2 + years manufacturing	7000	2
(DR/2007) 3 + years commercial	BUUU	2
	4 .	

Lancashire **PROGRAMMERS**

IDR/2018) 12 + Inonth's COBOL

(DR2009) 18 + months COBOL (DR2010) 2 + years COBOL (DR2011) 3 + years COBOL	6250 6700 7200	3 4 4
Contact Cathy Scott		
Yorkshire		
ANALYSTS		lde of Cations
(DR/2012) 12+ mths coinmercial,		3
(DR/2013) 18 + months tinancial		4
(DR/2014) 2 + years refail .	7300	
(DR/2015) 3 + years commercial	7750	5
PROGRAMMERS		

Yorkshire			
ANALYSTS	£ 14	de of Cations	
(DR/2012) 12+ mths coinmercial.		3	
(DR/2013) 18 + months tinancial		4	
(DR/2014) 2 + years retail .	730 0		
(DR/2015) 3 + years commercial	7750	5	
PROGRAMMERS			
(DR/2016) 12+ months RPGII		2	
DR/2017 18 + months COBOL	6250	0	
(DR/2018) 2 + years COBOL	8500	4	
(DR/2019) 3+ yrs (seniors) COBOL	7200	5	
Contact Cethy Scott			

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(DR/2020) 2 + vesus manufacturing 6750 2 (DR/2021) 3 + years connected 7500 2

PROGRAMMERS

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atilain light

THE SALES BIT

pire trilogy by Isaac Asimov.

In essence (with no guarantees for literary accuracy), aur hero is aummoned to the presence of the Emperor of the most powerful interplanetary empire within the galaxy. His arrival at the capital city is an awe-iospiring experience, such is the architectural grandeur of its setting and the technologically advanced state of its fundamental mechanism.

our hero begins to regain his confidence.

Without moving his guard-two observe the task in which the emperor is to deeply engressed. He is staggered by what he sees, but instantly recognises the nature of the job he has to do.

The emperor is checking the invoices!

On reaching the imposing palace, the very threshold of his meeting with the seat of

In trouble

The fourney through the labyrinthine corridors of the palace is extremely harrow, ing. Silent, menacing, robotic ing. Silent, menacing, robotic ideclement researchers and representations. guards monitor each step of the intimidation route. Even an unkind thought might ini-tiate personal annihilation.

Regal

the counselling room. In slow and total silence they swing he can almost perceive neross
its floor the hatural curvature
of the planet. There are no
curvatures, other than a band
of red carnet leading from the open to reveal a room so targe furnishings, other than a band of red carper leading from the door across to e golden desk at provide a familier by with configuration and the furthest end of the room, so far away, the emperor sitting behind it can barely be required. Subjects, covered will include more and all and a subjects.

DURING the process of considering possible topics on the hroad subject of sales management, I found myself recalling situation within a science years ago. I believe it comes from the Foundation and Empire trilogy by Isaac Asimov.

Staggered
Time passes, and slowly our hero begins to regain his

ultimate power, he experiences for the first time in his life the intimidating sensations of fear and uncertainty.

over innumerable millenia, the empire is in trouble. Since the advent of the new emperor, the economy has declined significantly; there have been rebellions on several outlying planets, there is unrest within the ministerial council and discontent among the people, even the hint of possible invasion by their traditional enemy from another galaxy.

Our hero's first job is to identify the root cause of the problem, a task which even the emperor himself has tackled with a total tack of success.

INDUSTRY Briefing is a series of conferences organised by inforced, designed ta give designed to give d

Suddenly, he is there, within the ante-chamber, before the monolithic doors of

Emperor who didn't know how to delegate

Staggered

(COURSES AND)

Briefing Yet, despite its history of Sessions

omnipotent power going back over innumerable millenia, INDUSTRY Briefing is a series

dustry, and will include presonations on topics such as ADA, system specification, distributed systems and speech recognition. The conference will be held in Paris. For further details telephone Elisabeth Fayola on (33-1) 766 2423

Removing the

THE Institute of Chartered Accountants of Scotland is running ting behind it, can barely be tequired. Subjects covered will ideotified.

As he walks the erimson causeway powards the plans cle of power, he tries to ignore the butterflies cascading in his stomach. He is aware of a trickle of perspiration running down his temple and the cleaninitess of his hands. He can now see the emperor quite that the result of the case of of the cas

can now see the emperor quite clearly in his regal robes of office, head bent, totally absorbed in some high matter of state.

He reaches the royal desk end stops, standing to artention, not daring to speak. The emperor is either too commitmed to his problem to remain the course will focus in online committed to his problem to remain the course will focus in online committed to his problem to remain the course title is Data Processing in the 1980s.

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exploit this growing demand.

systems is continuing to grow rapidly. Computer systems are now no longer just the perogative of the big battallons. With the introduction of the mini computer

Your job will be to lloise with the cliant from the time the equipment is being installed to ansure a smooth installation/implementation and hand over at which point the cliant will become part of the Individuals cliant...

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certainly appeal to our client.

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Mini Software Development



NEWS IN BRIEF

Hopes for

internal viewdata systems (CW, April 3) uperating well before the ctul of the year, following the completion of a feasibility study by Pactel.

It is likely to use an existing computer belouging to an external agency for speed of implementation and the biggest problem is thought to be finding the people to put its information into viewdata format.

Hewlett-Packard

CMPACTED ACKARD

HEWLETT-PACKARD

COPS SOS

Research Centre near Ipswich Is to be open to visitors all next week with about 20 exhibits showing the with about 20 exhibits showing the state of main areas of its development work simed at improving telecommunications services and boosting microelectronics technology, has decided that it is a dead end and although it will continue to manuthe industry's exports.

THE French labour ministry has sonounced a programme to provide a state-funded training course in DP. Starting in October, running for 10½ months and taking 1,000 trainces, the courses will have half the places reserved for

Nixon to speak today

PERHAPS the most retiring of the UK heads of mejor computer companies. Eddia Nixon is to address the London branch of the British Computer Society this evaning, Thursday, on "The benefits of an open merket"—giving an alternative view to that of Dr Chris Wilson, menaging director of ICL, who apoke to the branch on "The need for protection" in Pebruary. The meeting is at the Waldorf Hotel, Aldwych, starts at 6 for 6,30 and all are welcome. PERHAPS the most retiring of



National food invoicing network likely

which are currently in progress.

In the short term companies will order and invoice by means of magnetic tape and an online octwork is a very strong long-term possibility, following an amendment to the Finance Act 1980, under which electronic invoices are now accounted by the Currons and Excise Roard. acceptable to the Customs and Excise Board.

Boots the chemists and Makro already have a telephone link end such retailers as Fine Fare and Tescos and suppliers including Birds Eye

The company, which has been researching the technology at its Deer Creek Laboratories at Cali-

fornia's Silicon Valley has disco-

vered that the speed advantage is not consistent as densities in-

"We will continue to manufac-

ture SOS devices for e few years to

speed benefits decrease." He em-

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One stop supplies for

word processing

A NATIONWIDE electronic order and invoice network for food manufacturers, suppliers and retailers could come about as a result of trials for grocery product manufacturers and retailers in the IIE

Trials -

"We don't expect to experience too many Titl! Department of Industry hopes to lave the first stages of its internal viewdata systems (CW, April 3) unconting well before the

and the sapphire substrates cost ebout 10 times more than silicon use it as the basis of major com-

oumhering system and a modified version of the transmission standards of SITPRO, Simpli-fication of Trade Procedures Board.

Operational standards for the system have been approved by the association's council which represents 35 wholesalers and retailers and 400 manufacturers and suppliers.

The amendment to the Finance Act came about following recommendations by the association's trading data communications group,

Firms wishing to adopt peperless on Chubb month's written notice to the VAT Commission. The Act gives Customs and Excise the right to inspect the computer and "any associated apparatus and material."

\$150m bid for SEL

SYSTEMS Engineering Leboratories, builder of power-ful 32-bit machines for scientific

ful 32-bit machines for scientific and industrial applications, la the subject of e takeover bid valued at about \$150 million from Gould inc. At one time the big electrical and electronics equipment menufacturer was understood to be e serious suitor for Modcomp.

Gould is reported to be interested in Systems Englnearing as a meens of strengthening its position in the factory sutometion and anergy menagement industrias. At laset one other contender in the energy management buelness, Wastinghouse Electric, already uses Systems Engineering machines in its OEM systems.

Bleak outlook for Insac as Govt ture SOS devices for e new years to be technology is e major first," Boh Grimm, director of Hewlett-Packard's technology research centre told Computer Weckly. THE future of Insac, the National Enterprisa Board's software consortium, looks more uncertain in two Insac in two Insac Software is now based at the sale draws closer. The future of Insac, the National Enterprisa Board's software consortium, looks more uncertain than ever as the sale draws closer. The future of Insac, the National Enterprisa Board's software in contrast to current productivity in contrast to current productivity. Insac Software is now based at the saled by starts to sell off SPL and SDL

Other companies which have worked on SOS include RCA and

Intersli, but HP is the only firm to

microelectronics technology, has decided that it is a dead end and although it will continue to manufacture SOS devices for some years, it has terminated advanced research.

The company which has been interface his, and other communication chips. It also plans to continue developing higher decistly used in high voltage isolation applications. It is also less susceptible to radiation effects and the military and higher speed SOS memories beyond the existing 2K RAM and 2K ROM, including a 128K ROM.

is interested," said Grimm. However, disadvantages of the technology ere that yields are low

Grimm explained that, at dimensions of six microns, SOS devices are three times faster than equivalent bulk allicon devices, hut at one micron line widths, only a 16% speed increase is possible. Systema Designers.

The board is actively pursuing "As the densities increase, the

The board is actively pursuing negotiations with possible purchasers for the two software houses, of which it currently owns 79.9% and 26% respectively.

SDL has agreed a settlement with Insac by which their relationship will be brought to a closs. Insac provided help in setting up SysDes Inc, its US arm.

Insac is however pressing shead with marketing the products of its acquisition in the US, Altergo Software Inc, which has now been renamed Insac Software Inc. It is intended to broaden the range of

Atlanta, Georgia and is headed by

Northern Telecom turmoil

TURMOIL still prevails at Northern Telecom ern Telecom Systemis Corp. the litter whose UK atm is Data 100.

About 400 NTSC workers in the US-have just been permanently sail off as part of an effort to make private digital exchange business its operations, more efficient.

its operations more efficient, with NTSC last year as part of its NTSC was formed by Northern clercom of Canada after it acquired the two ferminal manufacturers. Data 100 and Sycor, and energed their operations, NTSC insa failed so badly to live up to the manufacturer.

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End of an closes

CONFIRMING the worst fears of the unions involved, cash registe manufacturing by Chuhh Cash a Brighton is to cease complete

with the loss of up to 550 job; The Brighton company was the last UK-owned electronic cash regiater huilder end used to be a major force in the UK market before being hit by foreign compet-tion. Up to four years ago it was owned by Gross Cash Registers.

Attempts to keep the Brighton operation going included calls by the unions for import controls on Jepanese ECRs and an undertaking hy Andrew Bowden, MP, (Con, Brightoo Kemptown), to put pressure on Trade Secretary John Nott to halt the import flood Chulch Cesh chairman William Chuhh Cash chairman William
Egar said that there had bee
discussions with the Department
of Industry about financial backing hut that only "limited facilities" had been offered. Egar commented: "It would have been
easier if we had been in the North East or on Merseyside. Brighton

the wrong place."
Chuhh Cash's profitable ca dispenser manufacturing operates at Brighton is not affected by the redundancies. But there have been warnings by TASS, the white or lar section of the Amalganate Union of Engineering Worken stake in word processor maker

Data Recall. Chairman Philip
Swinstead hopes that, ebout three
years after the sale, the firm's to save jobs in the cash regist shares will be offered to the public. sector.

